TRANSACTION COGNITION THEORY AND HIGH PERFORMANCE ECONOMIC RESULTS

(Draft 1 for Collegial Comment Only)

A Research Monograph

© Ronald K. Mitchell

The International Centre for Venture Expertise

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INTRODUCTION

Purpose

Why do some people, or groups of people, achieve high performance economic results while others do not? Psychologist William James (1890) has suggested that the greatest discovery of this modern age is the idea[1] that "we become what we think about." This monograph explores the relationship between the attainment of high performance economic results and human thought—specifically how transaction cognitions, a type of economic thought pattern that I introduce in this monograph, relate to the process of achieving high performance economic results. What then are high performance economic results, and what are transaction cognitions?

In my experience, when people attempt to define high performance economic results, they include at least one or more of the following, in the process crossing several levels of analysis: economic independence for individuals, profitability for firms, expansion for industries, and sustainable growth for economies, prosperity and cultural well being for societies. In this monograph, the connection between the achievement of these types of outcomes and transaction cognitions will be explored. But, as described in the following paragraphs, it is not always clear exactly what qualifies as a high performance economic result. So some discussion will be necessary to lay out the potential problems in definition, and to give an account of the approach taken herein to address them.

What are transaction cognitions? Transaction cognitions are the specialized mental models or scripts (Arthur, 1994a; Neisser, 1967; Read, 1987) that guide individuals' economic responses to three principal sources of variability in their economic behavior: bounded rationality (BR), opportunism (O), and specificity (S) (Williamson, 1985). Although—as noted above—it may now be considered to be axiomatic that thinking affects doing; the exact nature of the cognitions that are relevant to successful economic behavior has not yet been well established, and the systematic relationships that these cognitions have to some economic outcomes—such as high performance economic results—has not been charted. I hope to demonstrate in the chapters that follow: (1) that there exist three categories of cognitions: planning, promise, and competition cognitions; (2) that each category of cognitions is necessary but not sufficient to effect high performance economic outcomes; but (3) that together they <u>are</u> sufficient.

This introduction therefore consists of two sections. In the first section I define high performance economic results at multiple levels of analysis. In the second section I lay out the approach that I have taken in this monograph to define the concept of transaction cognitions, to explore the relationship of transaction cognitions to the accomplishment of economic results, and to suggest some of the implications of this relationship.

High Performance Economic Results

High performance economic results occur at several levels of analysis. Because each of us expects to produce (or to obtain) the results of economic activities that occur within one or more of these levels, definition is required at the transaction, individual, firm, industry, economy, and society levels of analysis. In this section, some preliminary definitions are put forward, and some of the related problems are discussed.

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[1] James actual statement was: "the greatest discovery of my generation is that human beings can alter their lives by altering their attitudes of mind" (James, 1890).

The Transaction Level

High performance economic results can be defined in a more or less general way. For example, at the lowest unit of analysis that I address in this monograph—the transaction level—I define high performance economic results as the success (or nonfailure) of a given transaction. Some might argue that there is more to it. For example, in assessing the level of performance of transactions, it might be suggested that the assessment of high or low performance may also involve making a determination regarding how much value a given transaction adds. And certainly, an evaluation of the amount of value added is an element that can add richness to an analysis. However, with the addition of this richness also comes additional debate about how much "value," and to whom. I take the position that it can be easily seen that the simple and conservative definition of high performance at the transaction level as the success (or accomplishment) of a transaction, provides a workable foundation for the development of theory that in its susceptibility to rigorous definition at lower levels of analysis, provides a sound foundation for rich analysis—an more importantly, interpretability—at higher, more aggregated levels of analysis.

And so I argue that the success or failure of transactions at the transaction level of analysis is important and qualifies as a high performance economic result, because—as more fully developed in later chapters—the successful transaction is the basic building block of economic results, analogous to the atom in physical systems, or the double helix structure of DNA in living systems. Thus, herein, it is taken as given that all economic results have their basis first in transactions.

However, there are other high performance economic results that are important to us: the achievement of economic independence by individuals, for example, or the superior performance of firms, industries, economies, or even of societies, are founded upon the success of one or more transactions. It is therefore important to also define high performance at each of these levels of analysis as transactions become progressively more aggregated.

The Individual Level of Analysis

Individuals create transactions—whether alone (Gardner, 1993: 9), or in groups (Peredo, 2000). Transacting is how we accomplish economic results for ourselves. And transactions do not exist without people.

Given this linkage, we can only separate the transaction and the individual levels of analysis conceptually—because such a separation does not actually exist in the real world. Thus, transacting can be viewed as a subset of individual behaviors that result from the set of decisions that follow a general cognitive sequence that answers the following questions: Do I (as a potential transaction creator) have something economic to offer to other persons in the marketplace? Can I agree on an exchange with another person? Can I deliver on that promise?

At the individual level of analysis, then, high performance economic results begin with the success of transactions—the set of exchanges that produce economic independence: "provisions in store for an uncertain future" (Durant, 1935: 2). The need for provisions in store is a fundamental motivation for most human beings, because it is basic to existence (Maslow, 1954). We can therefore proceed to define high performance economic results at the individual level of analysis to consist of some improvement upon a foundation economic independence.

Consequently, at the individual level of analysis, I have defined high performance economic results to be the attainment for that individual, of economic independence: the accomplishment of transactions sufficient to ensure provisions in store for the <u>conceivable</u> future. I readily admit that

this definition leaves open the exact meaning of the terms "sufficient," and "conceivable," but this is as it should be: that each individual is (or at least ought to be) free to make and to adjust these determinations for him- or herself. A key idea that hopefully will develop in the mind of the reader as this monograph proceeds, is the notion that specific transaction cognitions have an influence upon these meanings as they apply to all individuals—a clear link to public policy as it applies to business, government and society that will be explored in later chapters.

Firms

When individuals organize to aggregate sets of transactions into bundles (or transaction streams), the term "firms" is one highly useful way to refer to such aggregations. In this monograph I treat (or label) firms as first-level hierarchies, because the idea of an economic hierarchy as an organization of individuals seeking high performance economic results through the pooling of the transaction creation resources of those individuals, with some individuals directing production while others contribute as workers, has been basic for quite a long period of time (Coase, 1937; Knight, 1921; Mill, 1848). However, the firm level is one of the areas where the definition of high performance economic results is far from clear. In fact, at the firm level, high performance economic results have such a multiplicity of definitions that the articulation of the meaning of the term "high performance firm" has become a severe stumbling block for researchers whose work is concentrated on transaction creation at the firm level of analysis. For example, high performance at the firm level has been defined as mere survival (Birch, 1988; Shapero & Giglierano, 1982), profitability (McMullan & Long, 1990, and others), employment growth (Box, White, & Barr, 1993; Westhead, 1996), CEO-perceived growth performance (business growth: market share, cash flow, sales; and volume growth: sales, earnings, net worth) (Chandler & Hanks, 1994), meeting goals or objectives (budget, staffing, deadlines, quality, product reliability, efficiency, customer satisfaction, service) (Nerkar, McGrath, & MacMillan, 1996), return on investment (Biggadike, 1979; Tsai, MacMillan, & Low, 1991), and market share gain (McDougall & Oviatt, 1996; Tsai et al., 1991). Thus, the measurement of performance at the firm level has been recognized to be a complex undertaking, with no commonly accepted definitions of high performance, or methods by which firms should be evaluated (Biggadike, 1979; McDougall & Oviatt, 1996).

The key idea here though, is that regardless of which definition one chooses, an understanding of and the ability and decision to create high performance firms is of significant import to all of us. In an increasingly global economy, the creation of high performing firms plays a vital role in producing growth, new jobs, increased trade, and the accelerated generation, dissemination and application of innovative ideas (Arzeni, 1998: 18; Bates & Dunham, 1993; McDougall & Oviatt, 1997: 293). This can be seen in the results of higher-order aggregations such as industries.

Industries

When similar firms are aggregated together, this second-level hierarchy is identified as an industry, although agreement on the boundaries of these groupings is often hard to find (Cool & Schendel, 1986). Paradoxically, however, at the industry level as defined by analysts, high performance economic results have been more tightly defined (Porter, 1980; Porter, 1985). For example, market analysts regularly cite the performance of industry sectors as the reason behind fundamental market movements. Industry performance has occasioned in-depth strategic analysis that explores the nature and reasons for such performance e.g. (Christensen, 1997; Rumelt, 1987: 141).

Economies

Additionally, industry level transaction bundles/flows may be further aggregated into economies: third-level hierarchies. At the economy level, high performance economic results have quite standardized definitions, mainly centering around Gross Domestic Product (GDP), per capita GDP, GDP growth, and standard of living measures (although I argue in the following paragraph that standard of living is more properly a society level outcome). It is at the economy level of analysis that high performance economic results appear to have the widest variability. Economies are categorized into "tiers" that stratify economies according to performance measures. At the economy level of analysis, the economic tier-based "have" and "have not" comparisons among the economies of the world are striking. It is also at the economy level of analysis that one begins to wonder what it is about performance at the lower levels of aggregation (e.g. the transaction or firm level) or at higher levels (e.g. the society level) that creates such divergence at the economy level.

Societies

Often an economy-level aggregation constitutes only one part of a larger whole—the society or nation—such as in the case of China, for example, which is considered to consist of at least nine regional economies (Keng, 2000). At the society level, high performance economic results are most clearly manifest in standard of living outcomes. Although high performance at the society level may include factors that are not necessarily all economic in nature (e.g. the quality of art, or satisfaction from religious observance, etc.); it can certainly be argued that the combined economic performance of a society is a necessary and fundamental pillar that supports a given standard of living.

A Broad v. Narrow View

What does this definitional approach mean for the reader of this monograph? To answer this question, it is helpful to understand that the monograph is intended to be an integrative work that addresses multiple levels of analysis (Rousseau, 1985) at a high level of generality. This being the case, it has been important to select definitions that are equal to the task at hand. That is, because high performance economic results apply to transactions, to individuals, to firms/organizations, to industries, to economies, and to whole societies; and because the economic aspects of the analysis vary in level of generality from income management issues and issues of general production, to those of comprehensive material welfare, it is both convenient and prudent to utilize a definition that is sufficiently encompassing. Thus, in encountering the definitions presented within, that are susceptible to application at multiple grouping levels and to a high level of generality, the reader might expect to see the development of a broad v. a narrow view of the term high performance economic results as it is related to the thinking processes that create such performance: transaction cognitions.

Transaction Cognitions: Map of the Monograph

To define and explore the concept of transaction cognitions and its relationship to the accomplishment of economic results, and to suggest some of the implications of this relationship, this monograph is divided into three parts: theory (Chapters 1 and 2), implications (Chapter 3), and discussion (Chapters 4 through 6). A brief map of these chapters follows.

In Part I, Chapter 1, Foundation Theory, we begin the analysis by considering the growing role of cognitions in socioeconomic explanations, and by examining the cognitive implications of transaction cost economic theory. As confirmed by several recent Nobel Prizes in Economics

(Allais, 1988; Coase, 1991; Fogel and North, 1993; Simon, 1978; Sen, 1998), a rich conceptual foundation is now available for the analysis of economic problems that have previously been viewed to be intractable or have been assumed away, because neoclassical economic theory did not accommodate certain aspects of variability in the economic behavior of individuals. The application of cognition research to this foundation suggests a potentially useful integration of theories. In Chapter 2, Transaction Cognition Theory is systematically developed, and is shown to be a natural next step in understanding/explaining and, in fact, creating high performance economic results.

In Part 2 of this monograph, which consists of a single multi-part chapter, I hope to demonstrate, respectively, the implications of Transaction Cognition Theory at each level of analysis. Therein I hope to illustrate how a cross-level model can be developed, and that the development of a multi-level theory of high performance economic results that is driven by compositional relationships (Rousseau, 1985) is possible. The multi-level discussion begins by addressing the standards that apply to the development of multi-level theory. For reasons of theoretical consistency, the "transaction" and the "opportunity" levels of analysis are introduced and related to the individual level of analysis as the foundations for the other levels previously identified (firm, industry, economy, etc.). Also in this chapter, master propositions are developed that relate the general cognition categories: planning, promise, and competition cognitions, to high performance economic results at multiple levels.

Then, in the later sections of Chapter 3, the implications for understanding individuals, firms, industries, economies, and societies (respectively), through the lens of Transaction Cognition Theory are considered. In each of the sections, a representative set of planning, promise, and competition cognitions are presented for each respective level of analysis. It is necessary at this point to highlight the idea of the "representative set." As far as can be determined at this present time, there exists no exhaustive set of cognitions at any given level of analysis. For convenience, the examples utilized as "representative sets" of variables have been selected, where possible, using theory from my own domain of study, which includes: entrepreneurship, business and society—especially stakeholder theory, strategy, and organizational theory.

The examples from the entrepreneurship field mostly concern the individual and firm levels of analysis, since this has traditionally been the focus of the entrepreneurship research stream; although Transaction Cognition Theory as developed places no such restrictions. Thus, for example, in Section 3-2, the individual entrepreneurial cognitions of searching, screening, planning/financing, set-up, start-up, and ongoing orchestration (Vesper, 1996) are shown to follow the planning, promise, competition pattern previously established in Chapter 2. Following this blueprint, Section 3-3—at the Firm level—introduces the relationship between arrangements, willingness, and opportunity-ability cognitions and the venture creation decision (Mitchell, Smith, Seawright, & Morse, 2000); Section 3-4—at the Industry level—develops the effects on the economic well being of industries of flexibility, value and application, and attribute prioritization cognitions (Christensen, 1997); Section 3-5—at the Economy level—summarizes the role of specific fiscal policy, monetary policy, and structural competition cognitions in the creation of high performance economies (Thompson, 1989); and Section 3-6—at the Society level—sets forth the implications for the well being of societies, of productivity, trust, and value cognitions (Mitchell, 1992; Mitchell, 1994b; Mitchell, Li, Keng, & Seawright, 2001). The chapter concludes with an essay that charts the path between high performance economic results and entrepreneurship specifically.

In Part 3 of the monograph (Chapters 4 through 6), I discuss the applicability of Transaction Cognition Theory in addressing several issues that I consider to be of importance. Thus, in Chapter

4 I apply Transaction Cognition Theory to the development of a theory of Global Entrepreneurship, which I define as: the capability to create new transactions that achieve high performance economic results anywhere on the globe. In the past, scholars—especially those in non-Western countries—have wondered how relevant Western models of entrepreneurship are to their specific situations (Hofstede, 1994). Chapter 4 addresses this question using Transaction Cognition Theory.

After initially proposing the theory in Section 4-1, I relate Transaction Cognition Theory to research in the social sciences. Thus, Section 4-2 deals with some of the philosophy of science considerations for the development of new theory, by specifically addressing criteria set forth by prior scholarship (Freeman, 1986; Kuhn, 1970; Popper, 1979; Stinchcombe, 1968). Then, in the remaining subsections of Chapter 4, I attempt to chart the path toward the establishment of an experimental science using Transaction Cognition Theory, by addressing some empirical considerations that arise from past and present research, and by suggesting some ideas that might be considered as future research possibilities.

Chapter 5 provides the opportunity to examine the educational possibilities for Transaction Cognition Theory to address the creation of high performance results: in market economies, in transition economies, and in the global economy. In Section 5-1, I: (1) outline the original pedagogical concepts that have formed the basis for the award-winning University of Victoria Entrepreneurship Program, and (2) describe elements of that program. Section 5-2 suggests implications of the educational model for high performance economic results, and in 5.2.1 reviews present challenges in North America, in 5.2.2 the application to transition economies, and in 5.2.3 expert assistance technology.

Chapter 6 is written to consider the possibilities. First considered in Section 6.1 is the present "state of play" in high performance economic results as related to sample cognitions at several levels of analysis. This is followed by Section 6.2, within which I consider possible initiatives for future gains in economic results, in light of the present state of affairs by examining both research and dissemination/implementation initiatives. Section 6.3 concludes the monograph with a distillation of the observations in this monograph that synthesizes the possibilities considered.

The primary mission of this monograph is to introduce Transaction Cognition Theory to the scholarly community in such a way: (1) that through the theoretical and empirical analyses reported, an evaluation of the theory presented can proceed from a credible starting point, and (2) that future research, which builds upon the work to date, can be accelerated. Essentially, this monograph is an invitation—to those who are searching for what is systematic in the human quest for high performance economic results—to consider the possibilities offered by Transaction Cognition Theory for further movement toward a new and more integrative economic paradigm. In this sense this monograph departs somewhat from Hegelian skepticism as the primary guarantor of knowledge (Mitroff & Turoff, 1973), and instead adopts a more Kantian integrative[2] approach as the mode of persuading the reader.

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[2] However, an integrative approach may, of necessity, draw upon literature that is unfamiliar to readers who are specialists in one or another mainstream disciplines (e.g. economics, psychology, strategy, etc.). Within this monograph I have cited works from a variety of literatures, I believe quite uniformly: meaning that I often include citations to signal/communicate ideas that are much more fully developed elsewhere, but which—were I to digress to properly explain each one—would create a ponderous work indeed. Nevertheless, I do realize that in taking this approach, I place an additional expectation upon the specialized reader to "backfill" concepts from related literatures, and I try to provide enough context to make this a doable task. And for your extra diligence in this matter, I thank you in advance.

It is my hope that Transaction Cognition Theory described herein, and the explicative approach taken, will increase our collective capability to make a difference in the high performance economic results of mankind at every level of analysis.

Ronald K. Mitchell

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PART 1

THEORY

CHAPTER 1

FOUNDATION THEORY

High performance economic results are social in nature. Essentially, socioeconomic phenomena concern the interactions of a person within an environment that bears upon that person's economic outcomes. Study of the thinking that people do about these interactions has been undertaken by researchers in cognitive psychology, specifically scholars in the field of social cognition. This chapter addresses both the growing role of cognitions in socioeconomic explanations, and the cognitive implications of transaction cost economic theory as foundations for the construction of a model that can contribute to the understanding and creation of high performance economic results.

Section 1-1: The Growing Role of Cognitions in Socioeconomic Explanations

Socioeconomic Context

Aristotle said: "There would be no society if there were no exchange, and no exchange if there were no money" (DelMar, 1968 (1896): 1). According to this logic, money and society, are connected through the social relationship of exchange, which connection produces the socioeconomic context concerned in our analysis. A socioeconomic situation is necessary to accomplish material well being, because as individuals our "wants" exceed our "powers," while in the social state our powers exceed our wants. Through exchange, and due to different perceptions of value, the sum of society's powers is more effective in meeting the wants of individuals than are the powers of the individuals alone (DelMar, 1968 (1896): 2). Thus, in our consideration of the topic of high performance economic results, there exists an innate tension within the context. To be economically independent, for example, at once requires the individual to be free from the control, influence, support, or help of others; while at the same time being required to have a continuing involvement with them within the exchange process.

This dilemma appears to be insoluble unless one can introduce into the social calculus some medium whereby a portion of the uncertainty within the exchange process can be minimized through mechanisms that legitimately store value—through, for example as Aristotle suggested, the socioeconomic convention we have termed *money*—such that in most cases to be anticipated, the possession of money can be considered to confer a greater degree of high performance economic results.[3] Because the wants of individuals are effectively limitless, the demand for money—as the stored capability to assure a greater degree of material well being—is therefore also illimitable (DelMar, 1968 (1896): 17). By extension, given pressure toward a supply-demand equilibrium, the ultimate supply of money might also considered to be limitless, except as it is constrained by limitations on productivity (e.g., limitations on access to technology, levels of industriousness, etc.) and by the general level of confidence in the money itself as a medium for the storage of value in economic relationships (i.e. trust). Simply defined, then, money is a socially constructed symbol system for the storage of value (with its supply is limited by our productivity and by trust) that

[3] It is also possible to envision situations in which access to a sufficient level of material well being can be attained without recourse to the accumulation of money. Here, however, the definition of independence (self-reliance) must be relaxed. That is, it is possible to be economically quite well off without the possession of money; but only through our being subject to a greater degree to the control, influence, support, or help of others.

provides a widely accepted means for making possible increased high performance economic results, such as the economic independence of individuals.

When considered in this light, the existence of money as a socially constructed symbol system and as a well-accepted method for attaining and preserving the results of high performance economic accomplishments, suggests that the process of gaining high performance economic results poses an informational problem. That is, the age-old economic questions: What can I exchange? With whom shall I exchange? And, Can I produce it? —demand answers that, when obtained, become information. This triangle—that involves the use of information by the "individual," about "other persons" and "the work"—forms the structural foundation for Transaction Cognition Theory as it is systematically developed in Chapter 2. Seekers of high performance economic results might usefully be considered to be information workers (McCall & Kaplan, 1985), suggesting an appeal to cognitive psychology and its sub-field—information processing theory—for explanations of the information-action link.

Development of Theory

The foundations of the field of cognitive psychology include early works that: (1) addressed such topics as attention, filtering, imagery, memory, and reasoning (Bartlett, 1932; Broadbent, 1958; James, 1890; Miller, 1956), and (2) began a major shift toward the way that cognition is currently studied. During this period of relatively slow development (approximately 1940-1965) behaviorist theory (Skinner, 1953; Watson, 1924) tended to hold the attention of most experimental social psychologists (Walsh, 1995). It was not until Neisser (1967) wrote the book *Cognitive Psychology* that theoretical and empirical development in the field began to accelerate (Zajonc, 1992, as cited in Walsh, 1995: 281).

Cognitions have been defined as all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used (Neisser, 1967). Cognition itself, defined as the acquisition of knowledge, has also been conceptualized as *human information processing*, and reflects the predominant approach used in the field (Reed, 1982: 2). The acquisition, storage, retrieval, and utilization of information is considered to involve a number of separate stages, and the information processing approach attempts to identify what happens during these stages (Haber, 1969, as cited in Reed, 1982: 3). This approach is referred to as a "top down" information processing approach (Abelson & Black, 1986), whereby the past experiences of individuals in certain circumstances are imposed by the mind of those individuals to guide the process of present information processing (Walsh, 1995: 281).

Central to understanding the process of top down information processing is the concept of the knowledge structure, or information processing script (Ericsson, Krampe, & Tesch-Romer, 1993; Glaser, 1984; Leddo & Abelson, 1986; Lord & Maher, 1990; Read, 1987). A knowledge structure/script is a mental template, mental model, schema, or information processing short-cut that individuals impose on an information environment to give it form and meaning, and to enable subsequent interpretation and action (Walsh, 1995: 281). The subsequent interpretations and actions that use knowledge structures can alternatively: (1) result in expert performance, where individuals can produce outcomes within a given domain that are more than two standard deviations beyond the performance level of a population within that domain (Ericsson et al., 1993; Lord & Maher, 1990); or (2) result in thinking errors, because individuals who use top down information short cuts can also: be susceptible to stereotypic thinking, fill data gaps with typical but perhaps inaccurate information, ignore discrepant and possibly important information, be discouraged from

disconfirmation of their existing knowledge structure, and be inhibited in creative problem solving. Paradoxically, then, knowledge structures can be at once enabling and crippling (Walsh, 1995: 282). The key for information workers is to be able to utilize the former while minimizing the latter. What is the theory that forms the underlying foundation for understanding knowledge structures within the socioeconomic context?

One of the lines of inquiry by scholars in the field of *social cognition* (Fiske & Taylor, 1984) is to seek a better understanding of the manner in which knowledge structure/script-based theories explain individual cognitions within a social context. It is therefore in the field of social cognition that we can look to find an application of cognition theory to socioeconomic explanations.[4]

Social Cognition Theory

Social cognition theory originally emerged to manage the category of problems that require an explanation of individual behavior as it is shaped by the person-environment interaction. Social cognition theory considers that individuals exist within a total situation or *configuration of forces* described by two pairs of factors: one being *cognition* and *motivation*, and the other being the *person* in the *situation* (emphasis in original) (Fiske & Taylor, 1984: 4-5). Models used to explain individual behavior should approximate comprehensive reality (cognition and motivation; and the person-in-situation) as perceived when information about these two factor pairs is processed by each individual (Fiske & Taylor, 1984: 5, 16). In this manner, individual information processing is thought to be associated with individual decision making within a total situation, which suggests the extension of the social information processing perspective (Salancik & Pfeffer, 1978) in the development and justification of applied research models.

Information Processing Theory

Information processing theory attempts to explain how information is acquired, stored, and retrieved from the memory of individuals. As previously noted, cognitions have been defined as all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used (Neisser, 1967). Expert information processing theory is of particular interest to scholars who study socioeconomic phenomena, because it successfully accounts for the ability of people who are more able to attain high performance economic results, to transform, store, recover, and use information that is missed by those who are less able to gain such results. According to theory, experts possess knowledge structures or scripts about particular domains that allow them to significantly (two standard deviations) outperform non-experts who do not have and use such structured knowledge (Ericsson et al., 1993; Glaser, 1984; Leddo & Abelson, 1986; Lord & Maher, 1990; Read, 1987). An expert script is comprised of highly developed, sequentially ordered knowledge in a specific field (Glaser, 1984; Read, 1987), and as such may be defined as *an action-based knowledge structure*. The efficacy of expert scripts has been demonstrated in a variety of fields such as chess (Chase & Simon, 1972), computer programming (McKeithen, Reitman, Reuter, & Hirtle, 1981), entrepreneurship (Mitchell, 1994a), law enforcement (Lurigio & Carroll, 1985), and physics (Chi, Glaser, & Rees,

[4] Walsh (1995) provides an excellent summary of the growing role of cognition research in the explanation of one important socioeconomic phenomenon: the process of management. The reader is referred to his article for additional summary information regarding the terminology (1995: 284-285), theoretical discussions of knowledge structure content at multiple levels of analysis (1995: 287-288); and approaches to the study of cognition in organizations (1995: 309-310).

1982). Expert scripts are distinct from and should not be confused with dramatic (Goffman, 1959), forecasting (Shoemaker, 1993), or transactional (Berne, 1976) scripts.

Expert scripts are most often acquired in a dynamic process (Schumacher & Czerwinski, 1992: 65) where knowledge structures are organized in long term memory though the iterative interrogation, instantiation, and falsification of cognitions grounded in "real world" experience (Glaser, 1984). Expert scripts dramatically improve the information processing capability of an individual (Lord & Maher, 1990), but—as previously noted—with the higher potential for thinking errors (Walsh, 1995). (Recent entrepreneurship literature, for example, has examined some of the consequences suffered by individuals when information processing short-cuts such as scripts are used to deal with an environment characterized by information overload, high uncertainty or novelty, strong emotions, time pressure, and fatigue. These include: counterfactual thinking, affect infusion, self-serving bias, planning fallacy, and self justification (Baron, 1998); overconfidence or representativeness errors (Busenitz & Barney, 1997); and overconfidence, illusion of control, and misguided belief in the law of small numbers (Simon, Houghton, & Aquino, 1999).)

In this monograph I focus primarily on the positive effects of cognitive scripts by investigating common cognitions that are related to the attainment of high performance economic results. I argue that the possession and use of particular cognitions can account for some of the differences in observed levels of these results. However, while the possession and use of the requisite sets of cognitions is essential for the production of related outcomes, it is not always clear to individuals that a cognitive information set is lacking because the very skills needed to detect the deficit, are the skills contained within the missing cognitive set (Kruger & Dunning, 1999). This phenomenon—difficulties in recognizing one's own incompetence—will surface again in Chapters 5 and 6 when the application of Transaction Cognition Theory to educational models, and to future gains in high performance economic results, are considered. The investigation in this monograph, of the requisite sets of cognitions that are related to the attainment of high performance economic results will follow generally accepted criteria for cognition research.

Walsh (1995: 282) suggests four criteria that can be applied by researchers seeking to relate the top down information processing perspective to socioeconomic outcomes:

- First, researchers must uncover the attributes (content and structure) of particular knowledge structures that are applicable to the socioeconomic information environment (see primarily Chapter 2).
- Second, researchers must relate the use of this knowledge structure to consequences of substantive importance (see Chapters 4 and 6). (Note: Walsh also links this criterion to the fourth (below) due to the requirement for cross-level theory and measurement in these applications.)
- Third, researchers must uncover the developmental origins of the knowledge structures that are shown to have an impact of some consequence. By understanding how these knowledge structures develop, guidance in training or remedial change can be promoted—depending upon whether beneficial or deleterious consequences are in question (see Chapter 5).
- Finally, researchers must consider information representation and its consequences at multiple levels of analysis (see Chapter 3).

To illustrate points 1 and 2 above—how social cognition/top down information processing theory can: (1) be used to uncover the attributes (content and structure) of particular knowledge structures that are applicable to the socioeconomic information environment; and (2) be related to consequences of substantive importance—the theory is now applied to an example from the field of entrepreneurship.

Application of Theory to Socioeconomic Phenomena: An Example from Entrepreneurship[5]

A key study in the expert information processing literature, (Leddo & Abelson, 1986), furnishes the basis for the operationalization of the venture creation decision within a comprehensive reality as required by social cognition theory, through the use of scripts as action-based knowledge structures. The 1986 study reports the results of a set of experiments where the responses of subjects on several script-based tasks (e.g. planning) were observed. The observations of Leddo and Abelson (1986)—that the action-based knowledge structures or scripts of individuals appear to take into account comprehensive reality—are consistent with social cognition theory, and suggest the manner in which the total configuration of forces affects the cognitions utilized by individuals in decision making situations. Cognitive scripts were found to consist of information about *both* the situation itself and the sequentially ordered knowledge required for performance within that situation.

In the early stages of a script sequence, the scripts of individuals were found to emphasize the adequacy of script "entry" *arrangements* (e.g., does an artisan possess or have access to the tools of the trade and the required materials?). Here the constraints of persons in given situations were shown to be part of the scripts as suggested by social cognition theory. In later stages of a script sequence, individuals were found—while retaining their concern for arrangements—to emphasize "doing" or enacting script requirements, which implicates motivation/*willingness*, and the *ability* of individuals to carry out the main goal of the script (e.g., given tools and materials, will the artisan choose to, and be able to do the work?) (Leddo & Abelson, 1986: 121).

Evidence of these three general cognitive processes (arrangements, willingness, and ability) has previously been found in the testing of intention-based, planned behavior models of the entrepreneurial event, albeit under different labels (Krueger & Carsrud, 1993; Shapero, 1975; Shapero, 1982). These include: (1) arrangements cognitions, relating to the *feasibility* of the venture, (2) willingness cognitions, relating to the *propensity to act*, and (3) ability cognitions relating to venture *desirability* (Krueger, 1993: 5).

By adopting Leddo and Abelson's (1986) cognition constructs (arrangements, willingness, and ability scripts) it is possible to operationalize a model that links cognition and the venture creation decision. However, the social cognition concept of comprehensive reality suggests that cognition (and motivation) are informed or shaped by person-in-situation, in a total configuration of forces. Social context and personal variables reflect person-in-situation and these variables are indirectly captured in this model: social context informs arrangements scripts (the social context should suggest which arrangements are necessary) and personal variables inform willingness scripts (personal variables such as risk aversion or uncertainty orientation, for example, should shape cognition about willingness to venture). Ability scripts are analogous to some of the notions developed by Busenitz and Lau (1996:27): (1) schemas about risks, control, start-up opportunity or benefits, and (2) heuristics relating to availability, representation, overconfidence, and anchoring;

[5] Special thanks to the ICVE research team on the AMJ International Entrepreneurship Project. Please see this article (Mitchell et al., 2000) for the full study.

along with other lower-order ability scripts. In a later chapter, the empirical work that links arrangements, willingness, and ability cognitions to the venture creation decision—an outcome of socioeconomic consequence at the firm level of analysis—is further discussed.

Summary

In this section of the chapter the idea has been developed that cognition research has been undertaking a growing role and responsibility in the explanation of socioeconomic phenomena. The argument has been presented that, given certain levels of productivity and trust in human economic interactions, the attainment and sustaining of high performance economic results is fundamentally an information problem. A brief outline of cognition research, and its application to some socioeconomic problems has followed. In the next section, the argument is strengthened through an explanation of the cognitive implications of transaction cost economic theory, which provides the foundation for a Transaction Cognition Theory of high performance economic results.

Section 1-2: The Cognitive Implications Transaction Cost Economic Theory

The contribution of institutional economists to the socioeconomic literature has been to examine the question of why human beings organize economic relationships the way that they do. Early institutional economists (Coase, 1937; Commons, 1924; Commons, 1934) provided the foundation for the more recent developments in the study of the institutions that exist within market systems. Referred to as transaction cost economics (TCE) (Williamson, 1975; Williamson, 1985) this foundation uses legal and relationship-based concepts (e.g., contracts) to inform questions of organization in economic systems.

TCE theory suggests that the effectiveness of economic systems depends upon how well that human economic relationships work. Williamson (1981) describes the exchange "transfer" phenomenon in terms of human relationships as follows:

> With a well-working interface, as with a well-working machine, these transfers 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 (Williamson, 1981: 552).

For individuals to be willing to enter into exchanges, they must expect harmony. Thus, for example, where individuals feel that their interests are safeguarded, transactions will flow more easily than when they feel that their interests are at risk. "Simple economic transactions that take place 'on the spot' as one good or service is exchanged for another of equal value pose no problems and can be safely conducted in the free marketplace. However, as exchanges become more complex and uncertain—because the environment is not stable or predictable and because others cannot always be trusted to abide by the terms of their agreement—various kinds of external controls and supports must be devised to aid the exchanges—that is, to reduce the transaction costs" (Scott, 1987: 104-105). Institutional economists suggest that firms are created as the means of control and support in such situations. Coase (1937) summarized this idea with the aphorism: firms form where markets fail.

Under TCE theory, hierarchy is thought to result because transaction costs—the costs of running the economic system, that to economic systems are what friction is to physical systems (Arrow, 1969: 48; Williamson, 1985: 19)—effect a transformation from market to hierarchy. Under TCE theory, a firm is defined " . . . by the ideas of margin (boundary) and substitution (Marshall, 1920) together giving the ideas

of substitution at the margin" (Coase, 1937: 387). The substitution of one governance system for another (e.g. hierarchy for market) is thought to occur where the marginal social costs of a transaction become lower when that transaction is governed by a hierarchy instead of by the price mechanism (Williamson, 1975). This efficiency-based process has been termed "first order economizing" because it saves, or economizes, on the costs of a transaction (as compared to the more familiar "second order economizing" that results from price savings[6]) (Williamson, 1991). Thus, transaction cost economizing is thought to produce a reorganization of transactional governance that internalizes transactions within a hierarchy/firm.

Transaction cost economists argue that assets are internalized within a firm due to the failure of markets to govern certain transactions efficiently. Specifically Coase states:

> "Outside the firm, price movements direct production, which is coordinated through a series of exchange transactions on the market. Within a firm, these market transactions are eliminated and in place of the complicated market structure with exchange transactions is substituted the entrepreneur-coordinator who directs production" (Coase, 1937: 388).

Proponents of TCE theory argue that this substitution, or *fundamental transformation*, occurs in social situations where transactions must take place under conditions of asset specificity, where bounded rationality, opportunism, uncertainty, and frequency characterize the transacting environment (Williamson, 1985: 42, 55). Essentially, where assets have a substantially lower value under alternative uses (the working definition of asset specificity, Williamson, 1985), contracting for their employment is reduced from large numbers bargaining (fully contestable, price mediated market transacting), to small numbers bargaining (bilateral transacting), requiring an alternative governance structure (e.g. a firm/hierarchy) to safeguard the transaction. Without this protection, premature contract termination would cause the loss of the difference in value between the expected value for use of the asset in a given transaction, and its value under alternative employment. The transaction would fail without the external support offered by a firm. Thus, the existence of firms is explained by the minimization of transaction costs in the marketplace.

Transaction costs may also arise *within* a firm, although transaction costs in this context are characterized as failures of "coordinative alignment" v. failures of a market (Williamson, 1991). More specifically, transaction costs within a firm are described as:

> "Excesses of waste, bureaucracy, slack, and the like . . . (which arise) . . . because first order economizing alignments are not always obvious and/or sometimes are at variance with managerial preferences" (Williamson, 1991: 79).

Internal differences among firms, including their propensity to fail, may also be explained in terms of first order economizing. Essentially, then, TCE theory defines two cases of *first order economizing*: (1) autonomous economizing, which describes substitutions of hierarchies (firms) for the market due to market failure, and (2) coordinative economizing, which describes the substitution of one firm for another due to alignment failure (Williamson, 1991).

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[6] Transaction cost economists argue that the preoccupation of traditional economists with pricing, overlooks the more fundamental, "first order economizing" (Williamson, 1991: 78). Attention to first order economizing is thought to offer substantial potential benefit both to business and to society. For example, where first order (efficiency) economizing is directly compared to second order (price) economizing, the gains possible from first order economizing may "easily be on the order of 10:1" (Williamson, 1991: 79).

According to TCE theory (Williamson, 1991: 77), autonomous economizing occurs where ". . . consumers and producers respond independently to parametric price changes so as to maximize their utility and profits, respectively." Substitutions at the margin for which price is not considered to be a sufficient statistic require adaptations of a coordinated kind. Where dependencies exist among economic actors, e.g. within a hierarchy, coordination is necessary to facilitate effective first order economizing. Essentially, this translates into coordinating efforts to eliminate internal waste and inefficiency. Both autonomous and coordinative economizing impact transaction costs/economic friction. This prompts the question: What are the thought processes that individuals need to facilitate transaction cost economizing?

Cognitions and TCE

A clear understanding of the nature of human beings' cognitive involvement in socioeconomic processes is critical to the application of transaction cost economics to the topic of high performance economic results, because human beings are the economic actors that have the most influence upon the level of results that is ultimately attained, individually and collectively. Transaction cost economics expressly adopts the proposition that human cognition is critical to the types of relationships that result from exchange behavior (Williamson, 1996a: 326-327). As individuals go about the process of making exchanges within a market, they are thought to make economic choices according to a cognitive map that presents alternative contracting behaviors, selected based upon relevant cognitions (Williamson, 1985: 23-24). This cognitive map can be simplified to define the essence of the transaction, and from that definition, the nature of human cognitive involvement can be developed.

The foundation of an analysis that relates cognitions to the making of socioeconomic choices originates in a clear understanding of what is meant by transacting within a market. Within the imperfect markets (Jacobsen, 1992; Rumelt, 1987) that each of us must utilize to attain economic results, this understanding may be obtained by rigorously defining both transactions, and the market imperfections that affect them.

Transactions

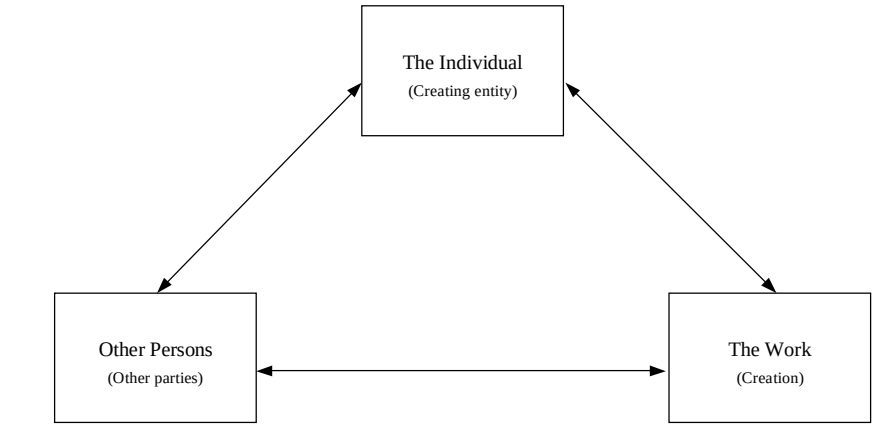
As previously stated, Aristotle noted the centrality of transactions when he stated: "There would be no society if there were no exchange" (DelMar, 1968 (1896): 1). Since exchange forms the basis for transacting, a rigorous definition of a transaction ought therefore to specify the irreducible components of exchange. This assertion poses a challenging question: Does the transaction have a basic form, analogous, for example, to the planetary model developed by Neils Bohr for field of nuclear physics, or the double helix model developed by Crick and Watson for the field of genetics?

In his extensive analysis of human creativity, Gardner (1993: 9) utilizes a model proposed by Csikszentmihalyi (1988), which I believe explains the essence of a transaction. Each of three components specified—the individual (creating entity), the work (the creation) and other persons (the other party to the transaction)—adds a necessary element. All must ultimately be present for a transaction to occur. Any two alone are insufficient to accomplish a transaction. Thus, there can be no transaction when an individual offers to transact without creating anything (the work) to sell. Nor can a transaction occur where an individual creates a work but has no buyers (other persons) to which to sell. And, the idea of a product (the work) being for sale to buyers (other persons) without a creator (the individual) is undefined. Arguably, then, although a transaction may possibly occur

using more elements than the three specified, it may not exist with fewer. A preliminary representation of a basic transaction is shown in Figure 1-1.

FIGURE 1-1

The Elements of a Basic Transaction



Based on Csikszentmihalyi (1988); Gardner (1993)

However, each component of the transaction introduces imperfections into the exchange. The individual introduces limitations to thinking processes: bounds to rationality; the work by its nature is specific: candles not crops, buns not beer, guns not butter; and other persons introduce opportunism: self interest seeking with guile. In the next part of this section, these attributes of an imperfect economy are discussed, and are specified in terms of their effects on the basics of a transaction.

An Imperfect Economy

The two decades encompassing the mid-1960's through the mid-1980's saw the development of economic theories that attempted to relax the neoclassical economic assumption of perfect rationality to take into account behavioral assumptions (Cyert & March, 1963; Nelson & Winter, 1973; Simon, 1979; Williamson, 1975; Williamson, 1985); assumptions that relate economic outcomes to cognitions of individuals about themselves, others, and the work that they produce. One of the more comprehensive of these theories—as summarized above—is transaction cost economics, which specifies three attributes of frequent transacting under uncertainty: bounded rationality, opportunism, and asset specificity (Williamson, 1985: 31). Bounded rationality refers to the cognitions that convert intendedly rational behavior into limitedly rational behavior (Williamson, 1985: 30). Opportunism—a behavioral condition of self-interest seeking with guile (1985: 30)—creates cognitions that lead to social friction due to moral hazard and distrust. Asset specificity refers to cognitions surrounding the non-trivial investment in transaction-specific (non-redeployable) assets (Williamson, 1985; Williamson, 1991: 79). These attributes create transaction costs, and the

attributes themselves arise due to particular cognitions. A brief explanation of these assertions about transaction costs and cognitions follows.

Transaction costs. As previously noted, transaction costs are defined as the costs of running an economic system (Arrow, 1969: 48). The notion of transaction costs is useful in the development of a model of transacting in an imperfect economy, because it specifies the behavioral features of the economic environment that are not perfect—the factors that cause costs. Transaction costs in social systems are thus thought to be the equivalent of friction in physical systems (Williamson, 1985: 19).

And, as also noted, at the organizational level of analysis the concept of transaction costs has been utilized extensively to argue that hierarchies (firms) and markets are alternative systems for governing transactions 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 could explain a variety of alternative system choices at various levels of analysis[7], including the individual level.

Thus, for example, there are well-documented instances reported as "prospect theory" (Kahneman & Tversky, 1979) where (in psychological prospect) losses loom larger than gains (1979: 288), and individuals' actual utility has been found to be less than expected utility—a difference likely due to transaction costs[8]. Or a person's choice between a job and self-employment might also be explained by a transaction cost-induced substitution at the margin (a decision to transact with a "boss" v. with multiple customers in a marketplace), as perhaps could success or failure in a job or a venture ("in" or "out" of a particular economic governance system: e.g. "boss system" or industry system). This idea of transaction costs explaining a wide variety of alternative system choices in the area of individual socioeconomic behavior—specifically security seeking behavior—will be further explored in a later chapter.

Cognitions. There is strong support for an explanation of market imperfections which, though economic, appeals to psychology. In his Nobel Prize acceptance speech, Simon (1979) reaffirmed Marshall's proclamation that economics is a psychological science (Marshall, 1920; Simon, 1979: 493). Also, Maurice Allais, 1988 winner of the Nobel Prize for economics for his theories on economic markets and the efficient use of resources, advanced (although not included in the Nobel citation) the Allais paradoxes (1953, published by himself over the objections of his reviewers), which—although virtually ignored for almost 25 years—provided a psychological explanation (Lopes, 1994: 203) for irrationality in the economic behavior of individuals (Allais, 1953). Furthermore Arrow (1982), when he observed that failures of the rationality hypothesis in economics are compatible with the observations of cognitive psychologists (Arrow, 1982: 5),

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[7] Williamson suggests that transaction cost economizing occurs at multiple levels of analysis, including the level of transactions, but also the level of nation-states (Williamson, 1996a: 332).

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

pointed to a branch of psychology within which one could look to find relevant models. Thus, generally, there is reason to suggest the use of psychological constructs as the basis for theory that describes transacting in an imperfect economy; and specifically, to suggest further examination of the social cognitive model in combination with the concepts of transaction cost economics as a theoretical engine that can drive an explanation of important relationships. This further analysis is conducted in the following chapter.

Summary

In this section of the chapter, the idea has been developed that TCE theory is well suited for linking cognitive constructs to economic explanations. Herein, I have argued that economizing behavior impacts transaction costs/economic friction; and further that economizing behavior is psychological in nature, being specifically described by social psychology. The basic structure of the transaction—analogous to the planetary model of the atom, or the double helix structure of DNA—was introduced, and an argument was developed to link transaction costs and cognitions as constructs useful for the explanation of the human approach to transacting in an imperfect economy.

This chapter, therefore, has set forth the foundation upon which an integrative theory of high performance economic results can be built. In Chapter 2, this integrated theory is proposed.

CHAPTER 2

TRANSACTION COGNITION THEORY

In this chapter, concepts from social cognition theory are integrated with concepts from transaction cost economic theory to form a Transaction Cognition Theory that explains high performance economic results. To highlight the key conceptual stepping stones covered in the last chapter, I begin Section 1 of the chapter with a brief summary of the relevant concepts previously discussed, and then in the balance of Section 1 proceed to integrate these concepts through a systematic derivation from the two foundational theories that results in the concepts of Transaction Cognition Theory. In Section 2 of this Chapter, I examine the linkage between Transaction Cognition Theory and high performance economic results in a three-part discussion that explores: (1) the content of transaction cognitions as derived from an analysis of equilibrium and social friction, (2) how such cognitions are acquired using concepts from expert information processing theory, and (3) how transaction cognitions can be applied to accomplish high performance economic results using Transaction Cognition Theory, which can rigorously illustrate how the four states of social friction (glide, traction, slippage, and drag) are influenced by transaction cognitions.

Section 2-1: An Integrated Theory

The Cognition Contribution

As noted in Chapter 1, social cognition theory originally emerged to manage the category of problems that require an explanation of individual behavior as it is shaped by environmental interactions, such as those that occur within exchange relationships. Social cognition theory considers that individuals exist within a total situation or *configuration of forces* described by two pairs of factors: one being *cognition* and *motivation*, and the other being the *person* in the *situation* (emphasis in original) (Fiske & Taylor, 1984: 4-5). According to social cognition theory, models used to explain individual behavior should approximate comprehensive reality (cognition and motivation; and the person-in-situation) as perceived when individuals process information about these two factor pairs (1984: 5, 16). In this manner, individual information processing is thought to be associated with individual decision making within a total situation, which suggests the extension of the social information processing perspective (Salancik & Pfeffer, 1978) in the development and justification of theory that uses planning, promise, and competition cognitions to explain exchange relationships.

Information processing theory attempts to explain certain aspects of cognition: how information is acquired, stored, and retrieved from the memory of individuals. Cognitions have been defined as all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used (Neisser, 1967). Planning, promise, and competition cognitions are therefore (respectively) defined as the transformation, reduction, elaboration, storage, recovery, and use of information that:

- *(planning)* assists 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;
- *(promise)* helps in building the mutual trust in economic relationships needed to effect an agreement between the Individual transaction creator(s) and Other Persons; and

- *(competition)* can create small or large numbers bargaining positions (i.e. some Work to offer that can be created by Individual transaction creator(s).

As further discussed in Chapter 1, an expert script is comprised of highly developed, sequentially ordered knowledge in a specific field that is most often acquired through extensive real world experience, and dramatically improves the information processing capability of an individual (Glaser, 1984), but with the higher potential for thinking errors (Walsh, 1995). Within the context of this monograph, it is the performance enhancing side of planning, promise, and competition scripts that is the point of focus. That is, it appears that planning, promise, and competition cognitions are likely to have a positive impact upon the ultimate success of transacting (i.e., the transaction occurs v. fails), which has implications for a transaction cognition-based theory of high performance economic results.

The Transaction Cost Economics Contribution

As also discussed in Chapter 1, the notion of transaction costs is useful in the development of a Transaction Cognition Theory of high performance economic results, because it specifies the behavioral features of the economic environment that are not perfect—the factors that cause costs. The three attributes of frequent transacting that cause transaction costs under uncertainty and frequency of transacting are: bounded rationality, opportunism, and asset specificity (Williamson, 1985: 31). Bounded rationality refers to the human cognitions that cause costs by converting intendedly rational behavior into limitedly rational behavior (Simon, 1979; Williamson, 1985: 30; Williamson, 1996b: 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 the non-trivial investment in transaction-specific assets (Williamson, 1985; Williamson, 1991: 79) that increases social friction due to the cognitions associated with commitment (Ghemawat, 1991) that increase transaction costs due to non-redeployability.

The presence of bounded rationality, opportunism, and asset specificity creates particular cognitions that give rise to transaction costs (Williamson, 1996b: 326-327). It stands to reason that as a result, 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) identifies three special-case social structuring/contracting arrangements: planning, promise, and competition, that organize exchange relationships subject to transaction costs within imperfect markets. Accordingly, the transaction attributes of bounded rationality, opportunism, and asset specificity are thought to have implications for the social organization of the contracting process into planning-, promise-, or competition-based exchange relationships (Table 2-1).

TABLE 2-1: Some Attributes of the Contracting Process (Williamson, 1985: 31)

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

0 = absence; + = presence

As illustrated in Table 2-1, in an imperfect economy where there is linkage between behavioral assumptions and social organization, 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 the transacting process (1985: 31-32)[9]. We can infer from this analysis, then, that this special set of cognitions—planning, promise, and competition—is likely to impact the behaviors that give rise to market imperfections.

Integration: Key Relationships

A logical extension of the relationships represented in Table 2-1 results in propositions that are useful in the development of a rigorous transaction-level definition of high performance behavior. Thus, if the absence of bounded rationality implies planning, it follows that:

> *Proposition 2-1$_a$: Planning Cognition levels are inversely related to Bounded Rationality levels.*

And, if the absence of opportunism implies promise[10], then:

> *Proposition 2-1$_b$: Promise Cognition levels are inversely related to Opportunism levels.*

[9] Williamson's insight that "governance" results when all three conditions exist will be utilized later in the analysis as questions of autonomous economizing, equilibrium, and transaction costs are addressed.
[10] Herein promise is taken to mean a binding commitment (v. a promise that may be empty and can be broken).

And finally, if the absence of specificity implies competition, then:

Proposition 2-1$_c$: Competition Cognition levels are inversely related to Specificity levels.

These propositions relate the independent cognition constructs: Planning, Promise, and Competition cognitions as defined, to the sources of market imperfection as dependent constructs: Bounded Rationality, Opportunism, and Specificity as defined, as shown in Table 2-2.

Thus, the extent of cognitions that individuals have about planning (e.g. that assist in developing analytical structure to solve previously unstructured market problems), promise (that help in identifying and prioritizing other parties to economic relationships thereby building trust in these relationships), and competition (that can create bargaining positions—small or large), is expected to impact the effect of transaction costs on the success of transacting. This utilization of transaction costs through the employment of specialized cognitions has significant implications for transacting in an imperfect economy.

TABLE 2-2

Proposed Relationships between Planning, Promise, and Competition Cognitions and Bounded Rationality, Opportunism, and Specificity, as Defined

Cognition Constructs	**Relationship**	**Sources of Market Imperfection**
Planning Cognitions: Mental models (Arthur, 1994a) 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.	(-)	*Bounded Rationality:* Behavior that is intendedly rational, but limitedly so (Simon, 1979; Williamson, 1985).
Promise Cognitions: Mental models that help in identifying and prioritizing other parties to economic relationships thereby building the mutual trust in economic relationships needed to effect an agreement between the Individual transaction creator(s) and Other Persons.	(-)	*Opportunism:* Self interest seeking with guile (Williamson, 1985).
Competition Cognitions: Mental models that can create small or large numbers bargaining positions (i.e. some Work to offer that can be created by Individual transaction creator(s).	(-)	*Specificity:* The non-redeployability of assets (Williamson, 1985).

Integration: Transaction Cognition Theory

I begin the explanation that integrates social cognition and TCE theory with the foundation idea that a transaction—as conceptualized herein—has three elements: the Individual (transaction creator), Other Persons, and the Work (Figure 1-1). Transaction Cognition Theory proposes that the existence of each element in the transaction is, in fact, the primary reason for the introduction of one of the sources of variability in human economic behavior. Thus, Transaction Cognition Theory suggests that each element of a transaction contributes to the nature of transacting, because transaction cognitions about the individual, the work, and other persons are impacted (respectively) by bounded rationality, opportunism, and the more general notion of "work"-specificity. That is, Transaction Cognition Theory suggests that the cognitions of an individual, about the work and others, are shaped primarily by bounded rationality. Correspondingly, Transaction Cognition Theory suggests that cognitions about other persons, in relationship to the individual and the work, are shaped primarily by opportunism; and that cognitions about the work, in relationship to the individual and others, are shaped primarily by work-specificity.

The similarity in the dyadic relationships that result from the application of this observation, to Williamson's analysis (Table 2-1) is evident, and the theoretical bridge connecting social cognition and transaction cost economic theories is thereby established. Consequently, it stands to reason that cognitions about any of the dyad-based relationships in the transaction model (Figure 1-1) (e.g. individual - work) will be primarily shaped by <u>only</u> two of the three behavioral conditions, and will thus be primarily shaped by planning, promise, or competition cognitions. Further analysis of Table 2-1 reveals the explanation for this assertion.

Although his argument supporting Table 2-1 appears to be bi-directional, Williamson (1985: 31) utilizes only one of the directions in his analysis of hierarchies v. markets. That is, he suggests (for example) that the absence of bounded rationality in the presence of asset specificity and opportunism implies planning; but leaves underutilized the logical extension that planning should therefore be useful in managing situations characterized by those same two conditions (because planning utilizes transaction costs that arise from bounded rationality). The same logic follows for transaction costs created by opportunism and asset specificity. Each (respectively) should be affected by promise (trust) and by competition (bargaining). Therefore, based upon Williamson's analysis (Table 2-1) and building upon Proposition 2-$1_{a\text{-}c}$, it is possible to argue in the general transacting case, that: (1) planning cognitions might be expected to influence transaction costs related to bounded rationality when constrained by work-specificity and opportunism, (2) promise cognitions might be expected to influence transaction costs related to opportunism when constrained by bounded rationality and work-specificity, and (3) competition cognitions might be expected to influence transaction costs related to work-specificity when constrained by bounded rationality and opportunism, as illustrated in Figure 2-1, and collectively that:

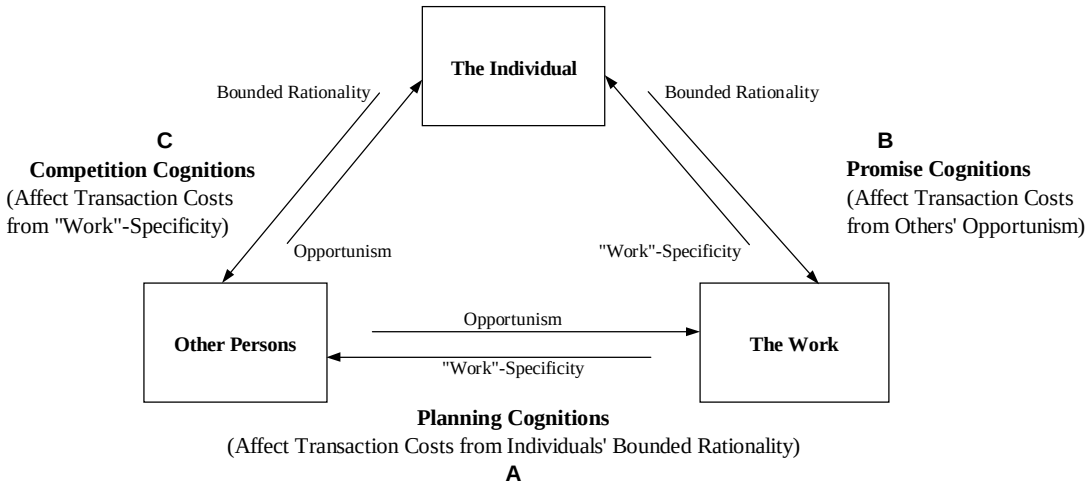
> *Proposition 2-2: Planning, Promise, and Competition Cognitions acting together are positively related to the occurrence of a given transaction.*

Figure 2-1 illustrates the role of planning, promise, and competition cognitions within a transaction that is proposed by Transaction Cognition Theory. That is, Transaction Cognition Theory suggests that to the extent that individuals possess or can acquire the specialized cognitive "scripts" for planning, promise, and competition, they can utilize the transaction costs that impact each dyadic relationships illustrated, to enhance the likelihood of transaction success.

FIGURE 2-1

The Effect of Planning, Promise, and Competition Cognitions

on Transaction Costs



Based on Gardner (1993); Williamson (1985)

The Microsoft - IBM transaction provides and example that illustrates the relationships diagrammed in Figure 2-1. As suggested in Proposition 2-2, the requirement for a completed transaction between Microsoft and IBM should be the use of all three necessary cognitions (Figure 2-1). A review of the actual circumstances illustrates the role of each cognition set[11].

First, for the product envisioned by Microsoft to be competitive, it was necessary that Gates & Co. be permitted to use the early DOS 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/competitive techniques (Figure 2-1: **C**), this key element of the product was acquired (transaction costs due to specificity were used to advantage.

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 and delivery (Figure 2-1: **B**) was communicated such that the possibility of transaction costs from opportunism could be diminished to an acceptable point in the Microsoft -

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

IBM deal, while remaining relatively higher for alternative transactions—once again an action that made transaction completion more likely.

Finally, before the transaction could occur, Bill Gates and 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 we can label the planning process (Figure 2-1: **A**), while the limits remained high for potential rivals. This permitted the fledgling Microsoft to utilize transaction costs to advantage—an action that made a completed transaction more likely, thus creating sufficient conditions for the Microsoft - IBM transaction to occur—one of the signal high performance economic events in computing history.

The key point to note in this example is that without the requisite planning, promise, and competition cognitions/scripts, the transaction would likely have failed due to the transaction cost-based social frictions. With a sufficient level of these cognitions/scripts present, a completed transaction—despite, or perhaps because of the effective use of transaction costs/social friction[12]—was the result.

The foregoing case, however, is recounted in a simplified form, where only the presence or absence of bounded rationality, opportunism, and specificity was allowed as a condition in the analysis. In the real world, these conditions are variables, and are rarely categorical. Thus, a specification of the general case requires that such categorical assumptions be relaxed, which suggests that two additional parameters must be included in the model represented in Table 2-1.

First, continuous variability should be introduced. Thus, rather than showing only "0" or "+," the table should provide for levels of bounded rationality, opportunism, and specificity that theoretically could range from 0 to +1 (although for operationalization purposes, researchers have nevertheless chosen to set threshold values—subject to internal validity standards—somewhere within the 0 to +1 range to simplify the solution set, and to aid interpretability) e.g. (Mitchell & Agle, 1997).

Second, once continuous variability has been introduced, the impact of the new logic must also be taken into account and represented in the model accordingly. For example, in the special case shown in Table 2-1, the absence of bounded rationality (shown as 0), in the presence of opportunism and specificity (shown as +, +), led Williamson to the conclusion that Planning is the implied contracting process in this special case. In this chapter, Williamson's logic has now been extended to comprehend the reciprocality of the relationship between showing a "0" for bounded rationality, and the existence of planning as the implied social contracting process. And accordingly in Proposition $2\text{-}1_a$, planning cognition levels are suggested to be inversely related to bounded rationality levels, which means that planning cognitions are thought to reduce bounded rationality. But this extension causes problems in the categorical set up (where the only values possible are 0 or 1) due to the lack of range—as previously noted—and also, due to the failure to comprehend in the model the social factors that might <u>increase</u> bounded rationality as well as reduce it (or simply not reduce it through their absence e.g., Planning Cognitions = 0; BR = 1). By extension in the argument, the failure to comprehend in the model the social factors that might <u>increase</u> as well as reduce/not reduce opportunism or specificity in their function in the analysis would also cause problems in the categorical set up.

[12] Please see the more detailed discussion and application of social frictions later in this chapter.

The idea of countervailing cognitions—those that operate to cancel some or possibly all of the effects of Planning, Promise, and Competition cognitions—has recently been suggested (Gurnell, 2000). In analyzing the reasons why some aboriginal peoples in Canada fail to attain economic independence, even while potentially possessing the requisite transaction cognitions, Gurnell suggests the possibility of canceling cognitions as follows:

> "But what if the level of requisite cognitions does not actually lie at the zero end of the respective planning, promise, and competition continua; but rather, what if the requisite cognitions have been supplanted in some degree by three debilitating—or substitute—cognitions that are artifacts of the repressive years, which in fact inhibit and constrain the development of the appropriate socio-economic scripts that would allow individuals within aboriginal society to attain a material wealth that is commensurate with their spiritual wealth?" (Gurnell, 2000: 3).

Gurnell goes on to propose and present arguments in support of the idea that these three substitute cognitions (corresponding to Planning, Promise, and Competition cognitions) are Fatalism Cognitions, Betrayal Cognitions, and Dependency Cognitions:

> "Williamson (1985) identifies planning, promise and competition as contracting attributes, which organize the relationships that are subject to transaction costs in imperfect markets.
>
> . . .
>
> If, as Mitchell and Morse (2000) deduce, the transaction is (analogous to) the finite element or atom of societal development while 'work', 'others' and 'the creating entity' each represent—furthering the atomic analogy—the sub-atomic particles (Mitchell & Morse, 2001); then planning, promise and competition cognitions act as both unifying force and lubricant for transacting.
>
> More specifically, planning assists in developing analytical structures and courses of action necessary to solve previously unstructured problems. Promise helps in building mutual trust in economic relationships; and competition can create bargaining positions—small or large. Each cognition (set) has an effect upon the transaction costs created by market imperfections, in particular, planning acts on Bounded Rationality (BR); promise acts on Opportunism (O); and competition acts on Specificity (S).
>
> Planning v. Fatalism. Prospective (transactors) may choose to plan a little, or to plan a lot. To completely disregard the validity of planning implies fatalism. Fatalism is the belief that events in life are pre-ordained or that human intervention is powerless to effect change.
>
> Promise v. Betrayal. One might be involved in high promise transactions or low promise transactions; but to avoid transacting entirely within a group implies that something has happened to that group's capacity for trust. That something is typically betrayal or continued exposure to disappointment.
>
> Competition v. Dependency. Presently native society shows an unwillingness to compete (Mitchell & Morse, 2001). This unwillingness has likely evolved from prolonged forced dependency upon Indian and Northern Affairs Canada, and is manifested in a lack of self-reliance. To further complicate things, societal norms have developed to prevent competition within native society" (Gurnell, 2000: 4).

Gurnell's insights help us to solve the problem of an arbitrarily constrained model by suggesting the dynamic elements needed. These include fatalism, betrayal, and dependency cognitions, which as an initial formulation move the development of Transaction Cognition Theory forward. However, reflection upon Gurnell's work leads me to suggest a few refinements.

Thus, while I agree that the labels: Fatalism and Dependency cognitions are sufficiently general to serve as the counterpoints for Planning and Competition cognitions (respectively); I suggest that the label "betrayal" might be too narrow to serve the counterpoint role in the case of Promise cognitions (in addition to having a pejorative tone that might compromise its use in a general model). Nevertheless, in searching for a more fitting label, it seems that Gurnell, in his description cited above, has provided the needed conceptual foundation, if not an adequate label. I suggest, therefore, that the cognitions that lead a person to "aroid transacting entirely," are, in fact, simply Refusal cognitions; and I shall refer to them using this label henceforth.

One other potential problem with the Gurnell formulation—the conceptualization as categorical variables—needs attention as well. Thus, while Gurnell's insights assist us in better formulating the general model, their presentation as "either/or" appears to be theoretically unfortunate. As I have considered this parameter of the general model, it seems more logical to me to further suggest that the so-called "substitute" or "canceling" cognitions serve as anchor points on a cognitive continuum. Thus,

Proposition 2-3$_a$: Fatalism Cognition levels are positively related to Bounded Rationality levels.

Proposition 2-3$_b$: Refusal Cognition levels are positively related to Opportunism levels.

Proposition 2-3$_c$: Dependency Cognition levels are positively related to Specificity levels.

These propositions relate the independent cognition constructs: Fatalism, Refusal, and Dependency cognitions as defined, to the sources of market imperfection as dependent constructs: Bounded Rationality, Opportunism, and Specificity as defined, as shown in Table 2-3.

TABLE 2-3

Proposed Relationships between Fatalism, Refusal and Dependency Cognitions and Bounded Rationality, Opportunism, and Specificity, as Defined

Cognition Constructs	Relationship	Sources of Market Imperfection
Fatalism Cognitions: Mental models (Arthur, 1994a) that are based on the belief that events in life are pre-ordained or that human intervention is powerless to effect change, which undermine the inclination to plan.	(+)	*Bounded Rationality:* Behavior that is intendedly rational, but limitedly so (Simon, 1979; Williamson, 1985).
Refusal Cognitions: Mental models that erode the capacity for trust, and cause those in potential exchange relationships to avoid transacting entirely.	(+)	*Opportunism:* Self interest seeking with guile (Williamson, 1985).
Dependency Cognitions: Mental models that are based upon a lack of self-reliance that result in a desire not to compete in a market system.	(+)	*Specificity:* The non-redeployability of assets (Williamson, 1985) (which in the case of Dependency Cognitions would constitute the polar case: NON-deployability).

The implications of this second parameter relaxation are therefore far-reaching, because the resulting model, though parsimonious, is intended to apply to a wide range of socioeconomic phenomena. Accordingly, it is expected that:

> *Proposition 2-4: Fatalism, Refusal, and Dependency Cognitions acting together are negatively related to the occurrence of a given transaction.*

Later chapters of this monograph explore this assertion in more detail.

The general case might then be represented as shown in Table 2-4, a version of Table 2-1 revised to represent the relaxed assumptions just introduced into the analysis. As indicated in the table, bounded rationality, opportunism, and specificity are shown to vary along a continuum from zero to one. Further, this variation is shown to effect a continuous range in the implied cognitive process, anchored at one end by cognitions that counter those at the other.

TABLE 2-4: Some Attributes of
The Social Cognition Process

Behavioral Assumption			
Bounded Rationality	*Opportunism*	*Specificity*	*Implied Cognitive Process*
0	1	1	Fatalism ↔ Planning
1	0	1	Refusal ↔ Promise
1	1	0	Dependency ↔ Competition
1	1	1	Governance *

Values 0 to 1 ⇒ absence to level of presence

* By definition already includes a range

What are Planning, Promise, and Competition cognitions and their counterpoint cognitions, and how does the level of possession of these cognitions relate to the level of achievement of high performance economic results in the face of transaction costs manifest in the form of social frictions? In the next section (2-2), the relationship between transaction cognitions and high performance economic results is further discussed. And, because answers to the "what" question require an investigation at multiple levels of analysis, then following the discussion in the balance of this chapter, I use Chapter 3 to develop more fully the nature of Planning, Promise, and Competition cognitions at multiple levels of analysis.

Section 2-2: Transaction Cognition Theory and High Performance Economic Results

Transaction Cognition Theory rigorously develops the idea that a combination of cognitive advantages (the possession of sufficient levels of Planning, Promise, and Competition cognitions) assists individuals to organize exchange relationships (among the Individual, Other Persons, and the Work) such that the sources of market imperfection that create transaction costs/social friction (bounded rationality, opportunism, and specificity) can be utilized to create high performance economic results. In its simplest form, therefore, Transaction Cognition Theory asserts a relationship between thinking and economic results that is based upon a two-part foundation comprised of social

friction and information. The development of the implications of the idea that information affects levels of social friction, which in turn affect economic results, is then a natural next step to take in the development of a better understanding high performance economic results.

It has been known for some time that knowledge/information has an important relationship to economics (Hayek, 1937). It has also been well accepted that there are market forces such as the existence of transaction costs/social frictions (Arrow, 1969; Coase, 1937) that impact knowledge levels, and thereby the tendency towards equilibrium (Hayek, 1937; Schumpeter, 1934), which in turn affect high performance economic results. But what has not yet been fully developed in the literature (Walsh, 1995) is an answer to the following questions:

- Which knowledge/information is critical?
- How is it to be obtained?
- How should it be utilized to accomplish high performance economic results?

In this section of Chapter 2, I first explore in detail the nature of transaction cognitions: the manner through which planning, promise, and competition cognitions influence the tendency towards equilibrium, and social friction, so that they can be utilized to create value; second, investigate carefully how the information (expert scripts) generated through the use of planning, promise, and competition cognitions can be used to organize exchange relationships; and finally, explain systematically how the concepts of equilibrium, friction and information combined in Transaction Cognition Theory can be utilized to generate high performance economic results.

Equilibrium and Social Friction

Equilibrium

A key driving force that explains dynamism in models of high performance economic results is the tendency towards equilibrium[13]. Hayek (1937: 44) states:

> "It is only with this assertion (the supposed existence of a tendency towards equilibrium), that economics ceases to be an exercise in pure logic and becomes an empirical science; and it is to economics as an empirical science that we must now turn.
>
> In the light of our analysis of the meaning of a state of equilibrium it should be easy to say what is the real content of the assertion that a tendency towards equilibrium exists. It can hardly mean anything but that (emphasis added) *under certain conditions the knowledge and intentions of the different members of society are supposed to come more and more into agreement*, or to put the same thing in less general and less exact but more concrete terms, *that the expectations of the people and particularly of the entrepreneurs will become more and more correct.*"

[13] The concept of a tendency towards equilibrium is used quite differently in the literature than is the assumption of equilibrium. Neoclassical economists assume equilibrium as the steady state, while the Austrian School assumes disequilibrium as the steady state and seeks to understand the tendency of the movement towards equilibrium from disequilibrium (Jacobsen, 1992; Kirzner, 1997). In this monograph, it is generally the Austrian view of equilibrium that is utilized in the argument: disequilibrium as the natural state, with a tendency towards equilibrium driving the dynamics (Hayek, 1937; Schumpeter, 1934).

Here Hayek advances the notion that the tendency towards equilibrium in markets is an outgrowth of the attributes of human nature itself: curiosity, the attempt to reach economic agreement, and the need to accomplish our expectations. Underpinning of this observation is the idea that the level of knowledge present figures heavily in the strength of the tendency towards equilibrium. Hayek treats the tendency towards equilibrium as "clearly an empirical proposition, that is, an assertion about what happens in the real world which ought, at least in principle, to be capable of verification" (Hayek, 1937: 44). Further he is careful to state that there is really very little known about the conditions under which such an equilibrium will ever be reached (Hayek, 1937: 48), which I take to mean that the processes of interest are those that occur in the movement towards equilibrium. So, for purposes of this monograph, the specification of the mechanics of this process—that relates levels of information to the tendency towards economic equilibrium—provide one component of dynamism in the model. Thus, it is tendency towards equilibrium, and the likelihood that it might be due to the informational properties of the transacting situation that provides the motive power of the model.

Transaction Cognition Theory further develops this idea. As described in the following paragraphs, the tendencies toward two types of equilibrium combine to provide the motive power for the model. The first is the tendency toward an economic equilibrium, which we have just addressed. The second is the tendency toward an efficiency equilibrium. The tendency towards each appears likely to be affected by the informational properties of the transaction; and is discussed in turn in the paragraphs that follow.

An Economic Equilibrium. The tendency toward an economic equilibrium as advanced by Hayek, is posited under two distinct conditions. Under Condition 1, the tendency towards equilibrium is employed (see Figure 1-1) in situations where Individual transaction creators strive to carry out their plans (intentions) in a "mutually compatible" way in the transacting relationship with respect to the plans of Other Persons (expectations) such as to "not cause any disappointments" (Hayek, 1937: 39-40). Hayek suggests that where no one set of intentions could satisfy all expectations; we could clearly say that this is not a state of equilibrium (1937: 40), implying that a tendency toward a Condition 1 equilibrium (the drive to bring intentions and expectations into alignment) would therefore be expected to act as a relatively constant economic force.

Under Hayek's Condition 2, the tendency towards equilibrium is employed in a second type of information sense, where the availability of knowledge is scarce, and where correspondence between subjective data sets (of Individual/Other Person(s) dyads) and the objective data tends to diverge. Here, the tendency toward a knowledge equilibrium would result because of the human desire to learn: which effects the conditions under which the knowledge of individual members of society relative to the objective facts, comes "more and more into agreement" (Hayek, 1937: 44).

According to Hayek, both Condition 1 and Condition 2 exist because:

> " . . . the 'data' from which the economic calculus starts are never for the whole society 'given' to a single mind which could work out the implications, and can never be so given. The knowledge of the circumstances for which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess . . . It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is (emphasis added) a *problem of utilization* of knowledge not given to anyone in its totality (Hayek, 1945)."

I therefore view knowledge, for purposes of this monograph, to be synonymous with adequate information. When viewed in this light it is possible to apply what I believe to be a fundamental insight offered by Casson (1982) that it is the internalization of commercial information (in this case taken to mean the creation of a cognitive understanding) that leads individual transaction creators to acquire control of assets, and hence links them to valuable economic results (Casson, 1982: 201). Hence, the equilibrating forces that operate with respect to accurate information should predict the tendencies towards equilibrium as illustrated in Figure 2-2, for a given set of transactions relative to a hierarchy.

FIGURE 2-2

Tendencies Toward an Economic Equilibrium

State of Information	**State of Organization**
Adequate Information	Control Over Assets is Acquired: ⇒ Tendency Toward Valuable Economic Results
Inadequate Information	Control Over Assets is Relinquished ⇒ Tendency Away from Valuable Economic Results

As shown in Figure 2-2, where adequate information is available, the tendency towards equilibrium will be that individual transaction creators will possess the capacity to exert control over assets impacted by the possession of that information.[14] However, under conditions where information is inadequate (inaccurate, non-existent, etc.), the tendency towards equilibrium will generally be that high performance economic control will be relinquished to await the emergence of transaction creators who have access to more accurate information (or to no one where such access is non-existent). Thus, it seems clear that the primary precondition for transaction creation is an improvement in the quality of information. How transaction cognitions (Planning, Promise, and Competition cognitions) may be acquired, and then utilized to improve the adequacy of information will be explained in later parts of this section.

But in addition to the information gathering forces that press transactions toward an economic equilibrium, are the informational forces that press transactions toward an efficiency equilibrium as well. Autonomous economizing (Williamson, 1991) generates forces that distribute transactions between markets and hierarchies[15]. The idea that autonomous economizing is an equilibrating mechanism within

[14] In the TCE case, where it is therefore only logical to suggest that coordinative economizing (the elimination of waste and inefficiency within a hierarchy) as discussed in Chapter 1, is a subset of this phenomenon.

[15] At a given level of analysis it can be assumed that there is a market/hierarchy tradeoff. That is, depending upon the degree of transaction costs relative to that level of analysis, hierarchy will further coalesce, or will not (thus hierarchy v. market at any given level of analysis). The non-coalescence of transactions into further, more aggregated bundles (high levels of analysis) may thus be viewed as a "relative market." Relative markets, therefore, may be thought to

the transacting environment that can also be harnessed to explain and create high performance economic results is explored next.

An Efficiency Equilibrium. As stated earlier, the defining characteristic of transaction cost economics is its insight that markets and hierarchies are alternative systems for organizing transactions, depending upon efficiency in the management of transaction costs. The tendency toward an efficiency equilibrium may lead: (1) toward the formation of a hierarchy as in the case where firms form due to market failure (Coase, 1937); or (2) toward the formation of a market from a hierarchy (Mitchell, 1992), depending upon the substitutions at the margin made by Individual transaction creators who are striving to carry out their plans in an efficient manner. The equilibrating forces of efficiency should therefore predict the tendencies towards equilibrium as illustrated in Figure 2-3, for a given set of transactions relative to a hierarchy.

FIGURE 2-3

Tendencies towards equilibrium

State of Efficiency	Efficient Market	Efficient Hierarchy
Organizing State	Hierarchy → Market (Tendency of transactions governed in a hierarchy to seek governance in a market)	Market → Hierarchy (Tendency of transactions governed in a market to seek governance under hierarchy)

Where the firm is efficient relative to the market (see Williamson (1985) for a thorough discussion of the conditions under which this result occurs), the tendency towards equilibrium will be for firms to form due to market failure (to efficiently organize transactions). However, under conditions where firm efficiencies have been eroded, or market efficiencies have been enhanced, the tendency towards equilibrium will generally operate such that markets will form and firms will fail i.e. disaggregation or the disorganizing of hierarchies will be expected to occur.

A Model. It may now be observed that a matrix-form juxtaposition of economic and efficiency equilibriums is possible. This model is appropriate because, as has been explained, the information content of a transaction influences the tendency towards equilibrium, which provides an explanation for two important motive forces that affect transacting. Under this construction, each of these forces is suggested to effect governance of transactions as shown in Figure 2-4.

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exist at each level of analysis. Further discussion of level of analysis issues is conducted in Chapter 3, but the concept of relative markets is left for future research.

FIGURE 2-4

The Effects of Equilibrating Forces on

Transaction Governance

Info/Efficiency	**Efficient Market**	**Efficient Hierarchy**
Adequate Information/Cognitions	I Tendency Toward Market Control w/ Efficiency	II Tendency Toward Hierarchy Control w/ Efficiency
Inadequate Information/Cognitions	III No Market Control/Efficiency: Tendency Toward Non-Initiated Transactions	IV No Hierarchy Control/Efficiency: Tendency Toward Transaction Failure

Type I transacting results where adequate information is available for a market to autonomously organize transacting. Type II transacting occurs, where adequate information is available for a hierarchy to efficiently organize transacting. Type III transacting may be observed where insufficient information exists for an otherwise efficient market (for a given transaction) to organize transacting, thus resulting in the non-initiation of a transaction—but also the opportunity to initiate transactions or transaction follows if "discovered" (Kirzner, 1980; Kirzner, 1997)[16]. Type IV transacting occurs where insufficient information exists for a hierarchy to organize transacting that is already too high in transaction costs for a market to organize—once again identifying an opportunity to extend the transaction success threshold through discovery[17].

Later in this section, this framework will be utilized to demonstrate the manner in which transaction cognitions (Planning, Promise, and Competition) can be utilized to organize exchange relationships such that high performance economic results may be accomplished.

[16] One might ask the question, how does one either: (1) gain sufficient information to alter the transaction such that the market can efficiently manage the transaction, or, (2) gain sufficient information to organize the transaction under a hierarchy?

[17] This time, one might ask the question, how does one either: (1) gain sufficient information to reduce the transaction costs incident to the transaction as presently constituted, or (2) gain sufficient information to expand the capability of hierarchy to take on the organization of otherwise problematic transactions?

Social Friction

It has been asserted that transaction costs are the economic counterpart to friction in physical systems (Arrow, 1969: 48; Williamson, 1981: 552; Williamson, 1985: 19). However, the implications of this metaphor for the development of a theory that better explains high performance economic results have not fully been explored. For example, while the idea of social friction has been used as an illustration, e.g. to help readers to better understand the concept of transaction costs in economic systems (Williamson, 1981: 552)[18] the application of this comparison to the development of a more rigorous set of theoretical expectations in the explanation of high performance economic results has barely started e.g. Chapter 13 (Williamson, 1996a).

In particular, the idea that—due to friction-based similarities—there is comparability between physical and economic systems remains underutilized. Some of the avenues of research that are possible from this comparison lead first, to the exploration of the suggestion that—as in physical systems—levels of analysis in economic systems may be logically derived if a model that can serve, for example, as the equivalent of the planetary model of the atom can be identified. Second, emerges the prospect that due to a more thorough understanding of the social forces at work, more efficient economic models may be discovered, because friction—as in physical systems—may both help and/or hinder the accomplishment of an economic objective and can thus be utilized, rather than merely being accepted/endured. The application of physical-social model similarities toward better understanding the multiple levels of analysis that are possible, is further explored in Chapter 3. Here in this subsection of Chapter 2, I further examine the application of social friction to the accomplishment of high performance economic results.

The Physical Systems Application. Just as in physical systems—where the relative presence or absence of friction may both help and/or hinder the accomplishment of an objective in the natural world—friction is also at the heart of the accomplishment of objectives in the social world, particularly economic objectives. Thus, if we were to extend the physical friction example into the social realm, we might expect or be able to foresee analogous results in the social situation, to outcomes in the physical one. As illustrated in Figure 2-5, the four possibilities that exist when considering the effects of social friction are represented in the labels in boxes 1 – 4. As we review the conditions represented in each box, the use of a sample physical system that must also confront a combination of these effects as an illustration, can help us to become more familiar with the relationships that lead to our economic expectations from social frictions. In reviewing Figure 2-5, it may therefore help to begin the analysis by thinking of the effects of friction in terms of a bicycle, or an automobile. In order to accomplish its objective—the transportation of physical objects from one place to another in the natural world—each effect of friction must be properly managed.

[18] Williamson writes: "With a well-working interface, as with a well-working machine, these transfers 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." (Williamson, 1981: 552)

FIGURE 2-5

The Effects of Friction

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

Box 1 indicates that helpful situations of low friction result in "glide" in physical systems. In the physical example, bearings and lubricants are used to effect this helpful condition in an automobile. Box 2 suggests that helpful situations can also arise in the high friction case. New tires with a high grip tread pattern create the "traction" necessary for the car to connect well with the road surface, which leads to efficient acceleration and deceleration. Box 3 points to the difficulties that can occur where low friction is unhelpful. Here, an example of bald or treadless tires suggests that "slippage"—a lack of traction when it is needed—can cause problems in the acceleration, deceleration, cornering, etc. of an automobile. Box 4 identifies the situation that occurs where high friction impedes the achievement of an objective. One can easily identify the difficulties that might occur due to "drag," where the bearings of an automobile become contaminated with—for example—sand, or some other high friction creating substance.

A Social Systems Application. Transaction Cognition Theory proposes that the four conditions represented in Figure 2-5 occur in social relationships as well. The next step in the analysis, then, is to uncover the systematic relationships that produce equivalent conditions in social systems to those suggested in physical systems. Once these relationships have been identified, further development (please see later chapters for some suggested possibilities) should be able to clarify how to utilize the theoretical relationships to accomplish particular economic objectives. But to take the next step in the analysis, it is necessary at this point to investigate both the sources of

social friction, and the conditions under which social friction can either help or hinder. Each topic is investigated in turn in the paragraphs that follow.

Social friction is at the heart of economic opportunity. The neoclassical economic model, for example, makes this abundantly clear. Under conditions of perfect information and instantaneous transacting—the two fundamental behavioral assumptions of neoclassical economics—excess supply or excess demand are eliminated through adjustments in the price that theoretically bring about equilibrium, a condition of zero economic profit (Jacobsen, 1992). Thus, under these hypothetical conditions of perfect information and instantaneous transacting (in perfect markets), there is no profit opportunity suggested to be present. Only when these conditions are relaxed (in imperfect markets: where information is imperfect and transacting is not instantaneous) is a profit opportunity suggested to arise. And, to be found at the root of imperfect information and protracted transacting, are social frictions.

Imperfect markets arise, therefore, due to social friction. In transacting, social frictions are introduced into exchange relationships by virtue of the components of the transaction (Figure 1-1). The manner in which these social frictions are introduced can be seen in an examination of the three fundamental components of the transaction shown in the diagram. For example, Individual transaction creators introduce bounded rationality—behavior that is intendedly rational but limitedly so—(Simon, 1979; Williamson, 1985), which eliminates perfect information.

Other Persons introduce opportunism into the transaction—self-interest seeking with guile (Williamson, 1985). Opportunism prevents instantaneous transacting. When transaction creators must worry about safeguarding their interests against opportunism, they consume some amount of time to do so, and transacting thus becomes protracted v. being instantaneous.

Further, the nature of the Work itself also introduces attributes that further limit the possibility of instantaneous transacting. This imperfection initiator is specificity[19]—the nonredeployability (Williamson, 1985) of the transaction creator's time. Once time must be spent in the creation of a product or service, a transaction is no longer instantaneous. Further, should Other Persons desire products or services that are different from those created, that same creation time is not available to create different products or services. Thus, when Other Persons desire Products B_n, while transaction creators have created Products A_n, the instantaneous element of transacting is also nullified due either to the time required by Other Persons for shopping, or to the time required for Individual transaction creators to engage in additional production behavior. Hence, imperfect markets arise due to the social frictions that are introduced into transacting by the bounded rationality, opportunism, and specificity that adhere to the transaction components: the Individual, Other Persons, and the Work.

As demonstrated in the preceding paragraph, information problems appear to be at the core of social friction. (For example, bounded rationality poses—for the Individual—the dual challenge of gaining access to information and of effectively processing it. Opportunism poses the problem of knowing the level of cheating to be expected from Other Persons. And specificity demands

[19] The more common term "asset" specificity (Williamson, 1985) has explicit meaning within transaction cost economics, which is consistent with its usage herein. However, use of the term specificity in this monograph (without the adjective "asset") is intended to facilitate wider applicability of the concept such that it could be susceptible to use with other adjectives that are appropriate to more, or to less general situations (e.g. specificity in the more general case, or work specificity, product specificity, service specificity, etc., in less general situations).

information about what Work to produce.) And, because—as in physical systems—the relative presence or absence of social friction may both help and/or hinder the accomplishment of an economic objective, social friction is also at the heart of economic opportunity or failure. The four conditions illustrated in Figure 2-5 (glide, traction, slippage, and drag) are therefore suggested to occur in socioeconomic relationships as well. Thus, to fully appreciate the effects of social friction it is necessary to investigate both the X- and the Y-axes of Figure 2-5. The drivers of conditions represented by the X-axis—the sources of high or low social friction: BR, O, and S—have been examined in the preceding discussions in this chapter. The drivers of the conditions represented by Y-axis—the conditions under which information problems, the primary source of social friction, can either help or hinder—will be examined in the succeeding paragraphs of this subsection. To identify the sources of help or hindrance that arise due to social friction we now examine the nature of information problems more closely.

Information Problems. The basis for the examination of information problems in transacting is a concept put forward by Schumpeter (1934): that economic activity may be described in terms of a flow of business activity (transactions), which depends upon changes in those "data with which the businessman must cope" (Schumpeter, 1934: 65). As noted previously, Hayek (1937) further developed the concept that information affects the flow of economic activity, by drawing a distinction between two data conditions (in the present instance taken to mean information conditions), each of which can help or hinder the accomplishment of economic objectives. These two information conditions are briefly summarized and further applied next.

According to Hayek, the first information condition occurs where the intentions of Individual transaction creators have the potential to vary from the expectations of Other Persons in the surrounding economic environment. This has to do with the mutual compatibility of the plans of transacting parties, such that in the case of the smallest unit of analysis, the transaction (Figure 1-1), there is more or less likelihood that these two parties can carry out their plans without any disappointments. Social friction is harmful to the extent that due to the mutual incompatibility of information, the revision of the parties' plans is inevitable (Hayek, 1937: 39-40). That is—in terms of the physical metaphor (Figure 2-5)—slippage occurs (Box 3) where there could be traction (Box 2) (because expectations in the situation require high friction and only low friction intentions are available due to information problems); and drag occurs (Box 4) where there could be glide (Box 1) (because the expectations in the situation require low friction, and only high friction intentions are available due to information problems). Interventions in the transacting process that effect mutual compatibility in information, therefore, appear to be the first means that social friction can be harnessed to help v. hinder transacting.

The second condition occurs where the subjective data sets of the transacting parties (their mutual expectations when in agreement) vary in their correspondence to the objective data (the facts) (Hayek, 1937: 40). This second situation presumes that the first condition (mutual compatibility of expectations) exists; and it imposes an even more stringent standard upon the transacting parties. Thus, under conditions where the mutual expectations of the transacting parties already coincide, there still remains an open question about whether these expectations correspond to a greater or lesser degree with the external facts (Hayek, 1937: 40). In this sense, "common" foresight may correlate to a greater or lesser extent with "correct" foresight, a condition of variability that also helps or hinders transacting. In this second case social friction is harmful to the extent that due to misinformation—the lack of correlation between the subjective expectations of the parties and the actual facts—foresight fails, along with the plans of the parties (Hayek, 1937: 41). This time—in terms of the physical metaphor (Figure 2-5)—in a low friction situation, slippage occurs (Box 3) where there could be glide (Box 1) (but glide does not result due to

mistakes about the actual situation); and in a high friction situation, drag occurs (Box 4) where there could be traction (Box 2) (also due to mistakes about the nature of the actual situation). Therefore, the cognitive processes that can effect mutual compatibility in information, both between the parties, and in correspondence with the actual facts, appear to be the second means that social friction may be harnessed to help v. hinder transacting. This idea is further developed as the monograph proceeds.

A brief definition of the terms "expectation" and "intentions" helps to clarify the nature of Hayek's Information Condition 1. For purposes of the model developed herein, the term expectations refers to the requirements of Other Persons in the transaction, and we have generally considered this to be the basis of opportunity for transaction creators. In this context, expectations constitute an environmental variable to the Individual, for example, as transaction creator. The term, intentions, describes the strengths or capabilities of a given transaction creator: essentially what the Individual in the transaction model has to offer to meet expectations. By the terms of this definition, then, the first information condition necessary for a transaction to occur is satisfied where expectations match intentions, and continues to be viable as long as this correspondence is maintained. Of course it is axiomatic that the adaptability of plans is essential for transaction creators, in order that this correspondence may be identified and preserved, because the expectations of Other Persons—and therefore the resulting opportunities—are constantly changing.

Next, a definition of subjective v. objective sets of data is also helpful to further clarify the nature of Hayek's Information Condition 2. This data comparison refers to the use of information to ascertain the correspondence of internally perceived reality (in this second case now on the part of both the Individual transaction creator and Other Persons in the transaction; i.e., internal to the transaction) with conditions in the objective, external environment. The subjective data reflect the internal skill set and its manner of deployment that is further influenced (non-exhaustively) by beliefs, culture, decision information flow, disposition of productive resources, language, politics, and skill sets, which are peculiar to the transacting situation, and change relatively slowly. Some organizational theorists would term the subjective data set "inertia" (Hannan & Freeman, 1989; Scott, 1987). Objective data are taken to mean the environmental munificence or threat factors that can impinge upon the subjective structural aspects of a transaction. To the extent that there is a match between these two data sets, survival of the transaction can be expected. To the extent there is disparity, selection out/failure of the transaction is expected.

Hence, each of Hayek's two informational conditions consists of matching an internal and an external factor. In the case of Condition 1, where internal strengths are matched with external opportunity, this matching is thought to constitute a sufficient condition for transaction initiation. In the case of Condition 2, a failure to maintain a correspondence between the internal (to the transaction parties) subjective and objective sets of data would constitute a sufficient condition for transaction failure. These information-based boundaries of transaction origination and transaction demise, were shown earlier in this section (in the discussion of equilibrium) to be critical to transaction survival, and thereby to the accomplishment of high performance economic results as defined at the transaction level of analysis (please see Introduction).

Interestingly, each information condition serves as a polar boundary that exists at either end of a continuum, beyond which transactions cannot succeed. In organizational theory terms, Condition 1 describes the level of adaptive acuity, and Condition 2, the level of inertial susceptibility (Scott, 1987). Without the first, transaction origination approaches the impossible. Without the second, the probability of transaction survival approaches zero. Together these information conditions form the foundation of an information-based general systems model (further developed later in this chapter) within which explanations of transaction origination, repetition, and demise can be framed.

It remains to be demonstrated next, how such information is to be obtained, and following that, how this information-based explanation (of the relationship among the tendency towards equilibrium, social friction, and information) is used by Individual transaction creators to create high performance economic results. How then is high quality information to be obtained?

Expert Information Processing

According to expert information processing theory, the level of an individual's expertise explains high performance in a wide variety of domains. The literature contains explanations for the high performance of experts in a variety of fields such as the arts and sciences (Ericsson, 1996), chess (Chase & Simon, 1972), computer programming (McKeithen et al., 1981), law enforcement (Lurigio & Carroll, 1985), physics (Chi et al., 1982), and sports and games (Ericsson, 1996).

Expertise has been defined as consistently superior performance on a specified set of representative tasks for a given domain (Ericsson & Charness, 1994: 731). Expertise is made possible by individual expert scripts (also known as knowledge structures or knowledge scaffolds) (Glaser, 1984). According to Transaction Cognition Theory, high performance achievement of results in the economic domain requires the accomplishment of the following set of tasks:

- Using transaction cognitions

  (Planning, Promise, Competition)

- To organize exchange relationships

  (Among Individual, Other persons, & the Work)

- That utilize the transaction costs created by market imperfections

  (Bounded Rationality, Opportunism, Specificity)

- To create value.

In this manner, Transaction Cognition Theory is linked to high performance economic results. Transaction Cognition Theory suggests that superior economic performance results from the use of superior cognitive maps: expert economic scripts. How is it that expert cognitions can in fact lead to high performance economic results?

Expert Cognitions and High Performance Economic Results

It has long been thought that due to uncertainty—the existence of ignorance and the resulting necessity for human beings to act at times upon opinion rather than knowledge—a great majority of people would rather trade some portion of their economic output for a guaranteed wage (Knight, 1921: 268). Until recently, it has also been thought that a rare few individuals who are intelligent, confident, and venturesome must therefore be found to "insure" the doubtful and timid (1921: 269). However, with the steady development of social cognition theory, information processing theory, and expert information processing theory (in roughly succeeding subsets) it has now become apparent that this expertise—contained in expert economic performance scripts—can reliably be acquired (Glaser, 1984; Mitchell & Chesteen, 1995; Mitchell et al., 2000), and that accordingly, the relatively high level of reliance on the rare few to accomplish high performance economic results can be reduced.

Expert scripts are known to be sequential in nature (Read, 1987) and to be guided by the norms or standards of a given domain of expertise (Ericsson & Charness, 1994). According to Transaction Cognition Theory, high performance economic results occur where each step of an expert script utilizes transaction costs to advantage. It seems logical to assume, therefore, that one way to achieve high performance economic results, is to examine one's transacting scripts to see:

- which steps needed for these tasks are MISSING, and
- which steps needed for these tasks are FLAWED,

(another way of stating that Hayek's two conditions discussed earlier must be evaluated).

Thus, to gain expertise, it is necessary for people to become increasingly skilled at examining their own performance scripts according to the requirements for the tasks within a domain. Through the use of Transaction Cognition Theory, the tasks that are essential for the achievement of high performance economic results can be derived, and therefore can also be examined. According to Transaction Cognition Theory, high performance economic results can be expected where individuals are able to objectively and accurately assess and refine the extent to which they can use transaction cognitions (Planning, Promise, Competition) to organize exchange relationships (among Individual, Other persons, & the Work) that utilize the transaction costs created by market imperfections (Bounded Rationality, Opportunism, Specificity) to create value.

An examination of the foregoing expert domain task statement, reveals that the driving force behind value creation is the effective utilization of transaction cognitions: Planning, Promise, and Competition, since each of the other elements in the model are givens (although they still must be understood). What, therefore, constitutes the effective utilization of transaction cognitions?

There are several foundation concepts—that come from an analysis and extension of the previously introduced transaction cost economic terminology—upon which the expert tasks that lead to high performance economic results are likely to be based. These key definitions are summarized in Table 2-5.

TABLE 2-5

Transaction Cost Economic Terminology

Term	Definition
Transaction costs	The costs of running the economic system that are economic counterpart of friction in physical systems (Arrow, 1969: 48; Williamson, 1981: 552).
Bounded rationality (BR)	Behavior is intendedly rational, but only limitedly so (Simon, 1961: xxiv).
• Low BR	Approaching perfect information: unrestricted cognitive competence (Williamson, 1985: 30).
• High BR	Lack of knowledge (ignorance; cognitive incompetence).
Opportunism (O)	Self-interest seeking with guile" (Williamson, 1985: 30).
• Low O	Trust.
• High O	Cheating.
Specificity (S)	Unique or specialized economic attributes of the good or service in question (Williamson, 1985: 30).
• Low S	Fungibility.
• High S	Non-redeployability.

The logic that links these terms together explains how, under conditions of uncertainty and frequency of transacting, the social forces in the marketplace (represented by social friction and the tendency towards an economic and efficiency equilibrium) operate to optimize efficiency in transacting. Under conditions of low transaction costs/friction, the market is expected to efficiently manage transactions; and under conditions of high transaction costs/friction, hierarchies are expected to become the natural substitute for markets to efficiently manage transactions (Williamson, 1975). The tendency towards a transaction cost economizing (efficiency) equilibrium might be described as "market failure without transaction failure."

The idea that transaction failure is distinct from market failure is important, and does not presently figure very prominently in the literature. Market failure occurs when a hierarchy is autonomously substituted for a market due to transaction costs/social friction. Transaction failure occurs when neither a market nor a hierarchy can support a given transaction. As previously discussed, there exist two information-based limits to the existence (i.e. non-failure) of transactions. The first is the threshold condition, which calls a transaction into existence. This is Hayek's Condition 1, under which the expectations of Other Persons match with the intentions of Individual transaction creators. Because transactions are the foundation of all economic activity, all high performance economic results begin here. The second boundary condition—Hayek's Condition 2—is the termination point of a transaction's

existence (i.e. the subjective/objective agreement disappears before a transaction can begin, or during transacting where the objective environment changes sufficiently). At the point where the subjective data of the transacting parties does not correspond with the objective data, the transaction by definition is or becomes impossible. Thus, high performance economic results are built upon the foundation of successful transactions (those that exist within these limits)—and these transactions include both successful transactions in a market, and successful transactions that are governed by hierarchy.

So now, to see how the effective levels[20] of Planning, Promise, and Competition cognitions can actually impact high performance economic results, let us examine transaction cost economic theory for the purpose of constructing a representation of this zone of transaction success. This representation—a set of graphs—identifies efficient market and hierarchy regions of the zone, using levels of bounded rationality, opportunism, and specificity as successive independent variables (which—as previously noted—Transaction Cognition Theory proposes may be influenced by Planning, Promise, and Competition cognitions).

A Representation

Transaction cost economic theory suggests that the market-hierarchy transformation occurs due to the market imperfections that are introduced by bounded rationality, opportunism, and specificity. Under the tenets of transaction cost economic theory, there are thought to be certain conditions under which the governance of a transaction is expected to be "fundamentally transformed" from market governance to hierarchical governance. These conditions occur when bounded rationality, opportunism and asset specificity are <u>all</u> present together in the transacting situation (as illustrated on the fourth line in Table 2-1: "+ + +"), and result in "governance," meaning hierarchical governance.

Williamson provides in graphical format, the most well developed illustration of this idea using "asset" specificity as the independent variable which—TCE theory asserts—affects the comparative governance costs that drive the fundamental transformation. Williamson's illustration addresses the question of which governance structure (market or hierarchy)[21] is best suited to organize which transactions and why (Williamson, 1991: 82-83), as follows:

> " . . . (1) market procurement has the advantage over (hierarchy) when the condition of asset specificity is negligible, the reason being that markets have exceptional incentive intensity features (which elicit autonomous adaptation) and each party to a non-specific transaction can go its own way at little cost to the other; (2) hierarchy is favored as the condition of asset specificity becomes great, the reason being that the high-powered incentives of markets are maladaptive, as compared with unified ownership and the attendant use of fiat, for the purposes of harmonizing an exchange relation where bilateral adaptation needs are ascendant; . . . " (Williamson, 1991: 82).

Williamson then illustrates the foregoing argument graphically (Figure 2-6) using the following setup:

---

[20] Henceforth the net cognitions available (e.g. Planning minus Fatalism Cognitions) will be referred to as the "effective" level of planning, promise, and competition cognitions.

[21] In this argument Williamson also develops the idea of hybrid forms of organization, which is a useful idea in more advanced formulations of the argument under development here, but if introduced at this point in the discussion might only serve to blur the distinctions that are possible when using "polar cases" to illustrate, such as in the present instance.

> " . . . let M = M(k), H = H(k), . . . be reduced form expressions that denote Market and Hierarchy governance costs as a function of asset specificity (k). Assuming that each mode is constrained to choose the same level of asset specificity, then $M(O) < H(O)$, and $M' > 0$. The first of these two sets of inequalities reflects the fact that bureaucratic costs vary inversely with incentive intensity. The intercept for market governance is thus lower than is the intercept . . . for hierarchy. The second inequality reflects the marginal disability of markets as compared with hierarchies in adaptability respects as asset specificity, hence bilateral dependency becomes more consequential (1991: 82)."

As shown in Figure 2-6, which is a replica of the original (Williamson, 1991: 83), the expressions suggested (that are reduced form to accommodate a variety of parameter values) produce a two-part region for efficient transacting.

Region 1 represents the zone where the transaction costs of the market are lower than those of hierarchy. Region 2 represents the zone where the transaction costs of hierarchy are lower than those of the market. The point on the graph that represents the level of specificity at which the fundamental transformation is expected to occur is shown as point k^1, marking the intersection point of the curves.

TABLE 2-6

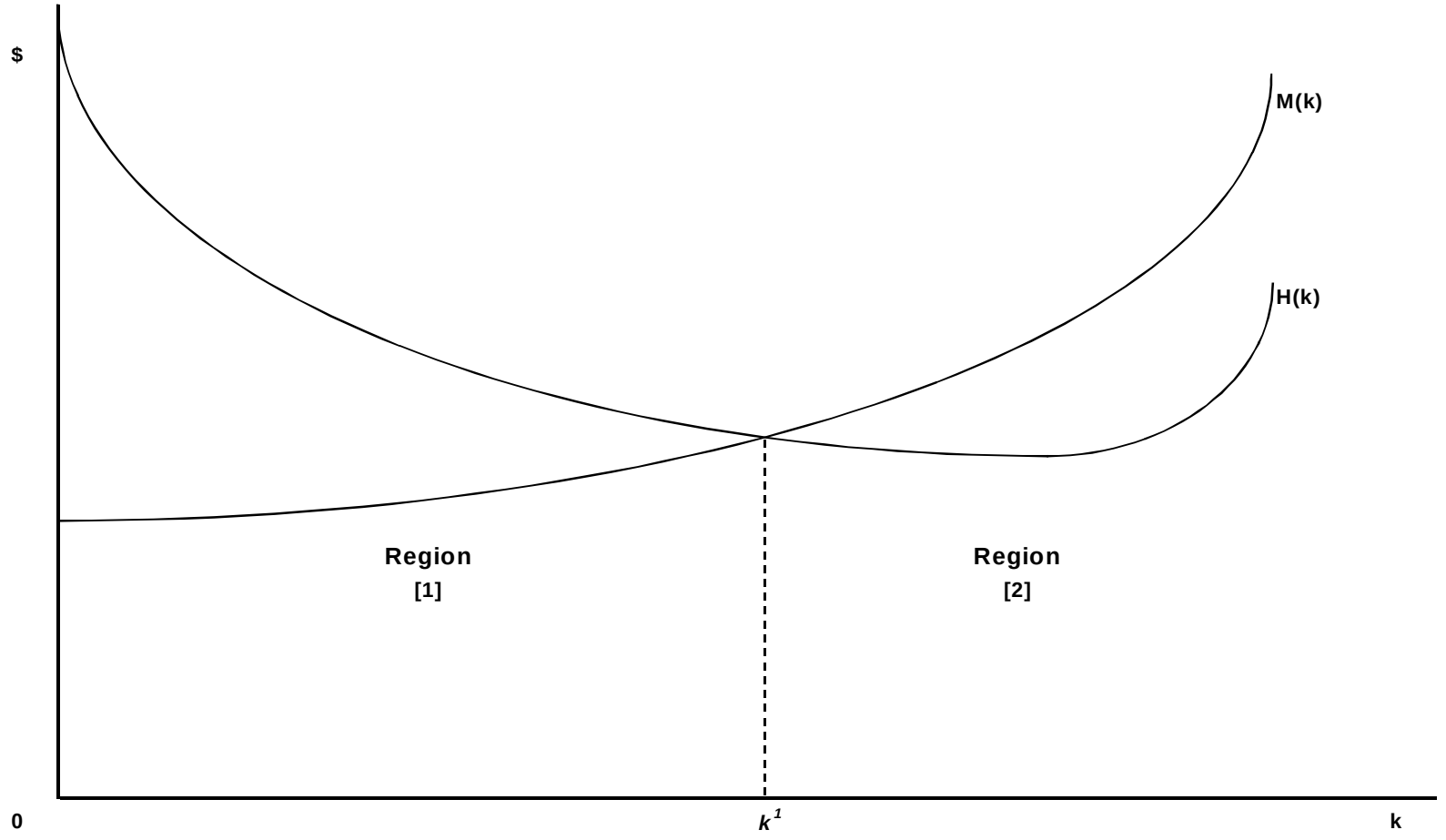
Key Features of Figure 2-6

Feature	Explanation
Y-Axis	Represents transaction costs expressed in currency form (although it is well recognized that all transaction costs are not necessarily convertible into money terms).
X-Axis	k = asset specificity.
k^1	Level of asset specificity at which the fundamental transformation occurs.
Region 1	Market more efficient.
Region 2	Hierarchy more efficient.

FIGURE 2-6

Market v. Hierarchy Illustration

Using Specificity as the Independent Variable



Comparative governance costs.

The reader should note that there is more curvature in the lines that appear as curves in Figure 2-6 than there is in the curve shapes that appear in Williamson (1991). The reason for this addition is twofold. First, as noted in a previous footnote, it is sometimes helpful in laying out the argument for a theory, to utilize polar cases as anchor points that help to demonstrate the points more clearly. Thus, higher and lower beginning and ending points serve a clarifying purpose. Second—and more importantly—because, in the following paragraphs Williamson's argument is about to be extended to accommodate and to illustrate the impact of transaction cognitions upon transaction costs/social friction, it is helpful to have more curvature in the graphs than that originally utilized. More curvature in the graphs will permit demonstration of: (1) the idea that the shape of the curve is a consequence of the levels of transaction costs/social friction in given situations, and (2) the manner in which Planning, Promise, and Competition cognitions impact the nature of transacting (i.e. these cognitions are expected to alter the shape of the curves in question).

There are two further concepts that may now be introduced to assist in the creation of a better understanding of the impact of transaction cognitions upon transaction costs/social friction. The first concept essentially makes explicit the earlier argument that the existence of a transaction has informational limits. Thus, in the graphs to follow, the idea will be illustrated that there exists an upper transaction cost boundary: a transaction failure line that theory suggests must also exist, and beyond which a transaction does not occur. The second concept is the idea—also implied in the theory developed earlier in this chapter—that comparative governance costs are not just a function of the level of specificity (although as noted previously, the case where specificity is the independent variable is the most well-developed). To remain consistent with theory, it is logical to expect that bounded rationality and opportunism levels should—as generators of transaction costs/social friction—also influence comparative governance (whether a market or a hierarchy is expected to govern the transaction). Hence, it should be expected that three graphs would be necessary to represent the transacting situation, each with a different independent variable (corresponding to bounded rationality, opportunism, and specificity). It would also logically follow that each graph would define four zones of governance with respect to high and low potential conditions (Table 2-5) of each independent variable (BR, O, S) as follows: (A) hierarchy inefficient, (B) market efficient, (C) market inefficient, and (D) hierarchy efficient.

The foregoing concepts and layout are illustrated in Figures 2-7, 2-8, and 2-9, which follow, with key points of the applicable explanations in Tables 2-7, 2-8, and 2-9. As indicated in the Figure/Table pairs 2-7, 2-8, and 2-9, each transacting situation then has a explicit manner in which transaction creators can—through the employment of transaction cognitions—utilize transaction costs to attain high performance economic results. Let's examine each one by using the graphs (figures) and tables to illustrate:

FIGURE 2-7

The Impact of Bounded Rationality on Transaction Governance

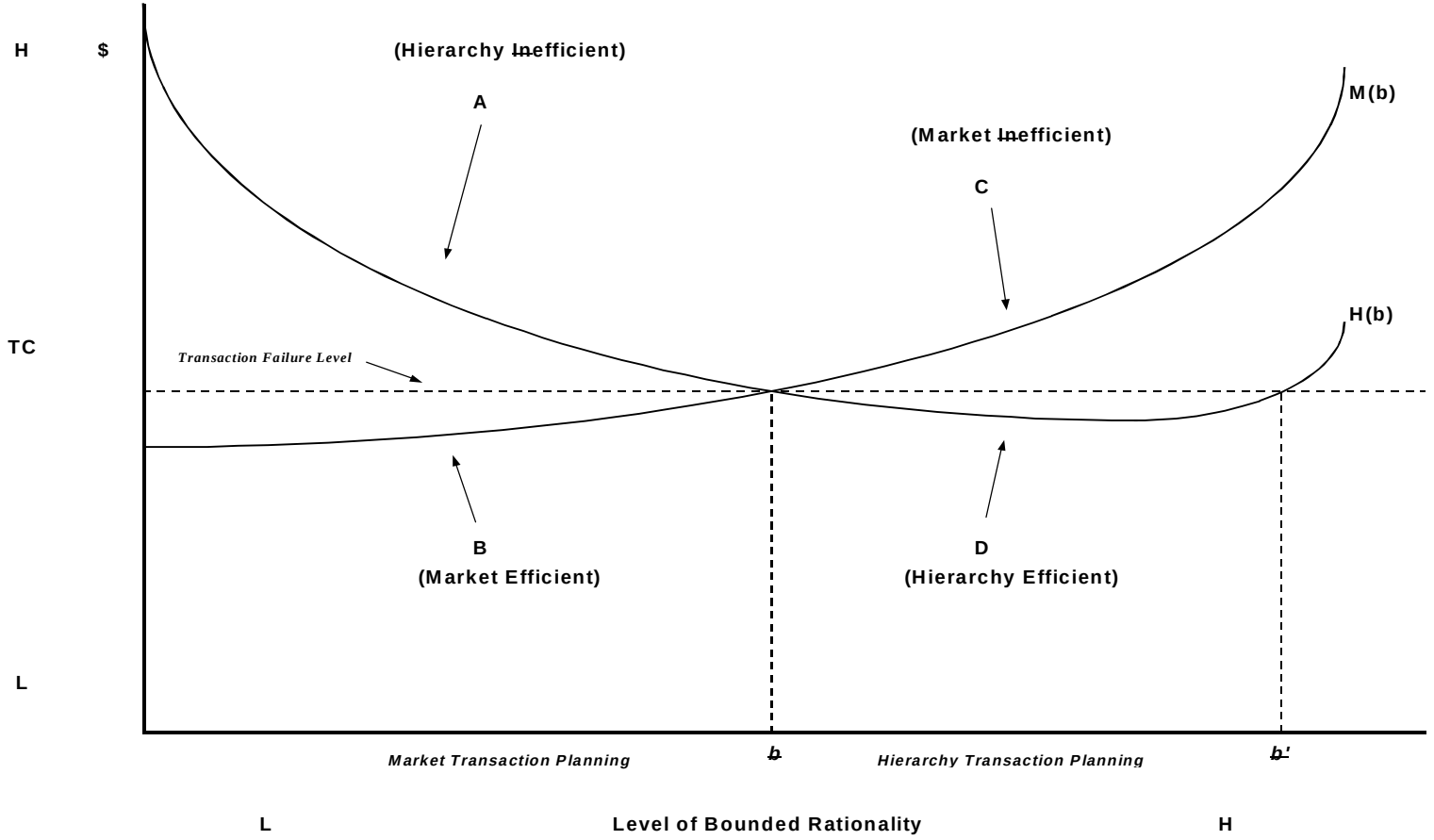


TABLE 2-7

Explanation of the Four Zones of Governance

Impacted by Bounded Rationality

Case A: Hierarchy Inefficient

Here a hierarchy adds no value because information is close to perfect:

⇒ Opportunism ↑ cost to group (hierarchy) promise when it adds nothing to the transaction.

⇒ Differentiation /specificity of work is understood; ∴ a group (hierarchy) is redundant.

Case B: Market Efficient

Here a market easily manages transactions that are perfectly understood by all, and planning involves only understanding that the market is more efficient:

⇒ Opportunism is easily recognized.

⇒ Any differentiation / specificity is known and easily utilized.

Case C: Market Inefficient

Here a market fails because a hierarchy is essential, or transactions won't happen:

⇒ Opportunism generates costs of erroneous promise.

⇒ Failure to recognize (lack of knowledge about) specificity kills transactions.

Case D: Hierarchy Efficient

Here a hierarchy internalizes information (makes a plan) based upon discovery:

⇒ Opportunism drives the fearful to the planner.

⇒ Differentiation / specificity is strategically utilized.

FIGURE 2-8

The Impact of Opportunism on Transaction Governance

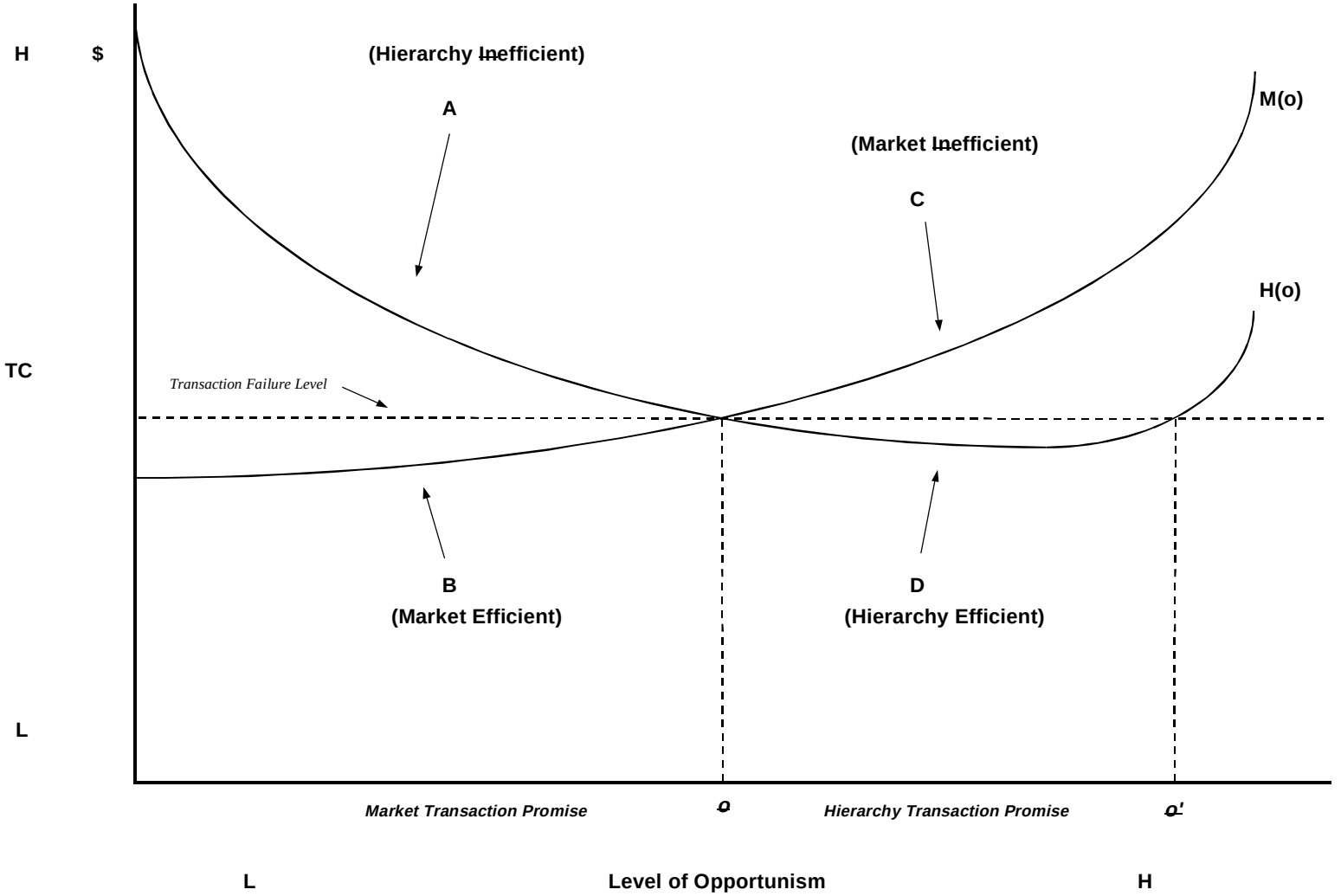


TABLE 2-8

Explanation of the Four Zones of Governance

Impacted by Opportunism

A: Hierarchy Inefficient

Here a hierarchy does not form because trust substitutes for hierarchy:

⇒ Planning for BR is unneeded due to collaboration arising from trust.

⇒ Efforts at differentiation / specificity cannot be kept secret.

B: Market Efficient

Here a market easily manages transactions that are based upon trust:

⇒ BR is low and trust handles the rest.

⇒ Specificity is sufficiently low to afford little gain from S-based opportunism.

C: Market Inefficient

Here a market fails because cheating dictates coordination to manage high BR & S:

⇒ BR generates errors and a high likelihood of being cheated.

⇒ Differentiation / specificity can be misrepresented.

D: Hierarchy Efficient

Here a hierarchy protects the promise process:

⇒ ↓ Opportunism through ↑ trust.

⇒ ↓ BR by communication of Specificity and reputation.

FIGURE 2-9

The Impact of Specificity on Transaction Governance

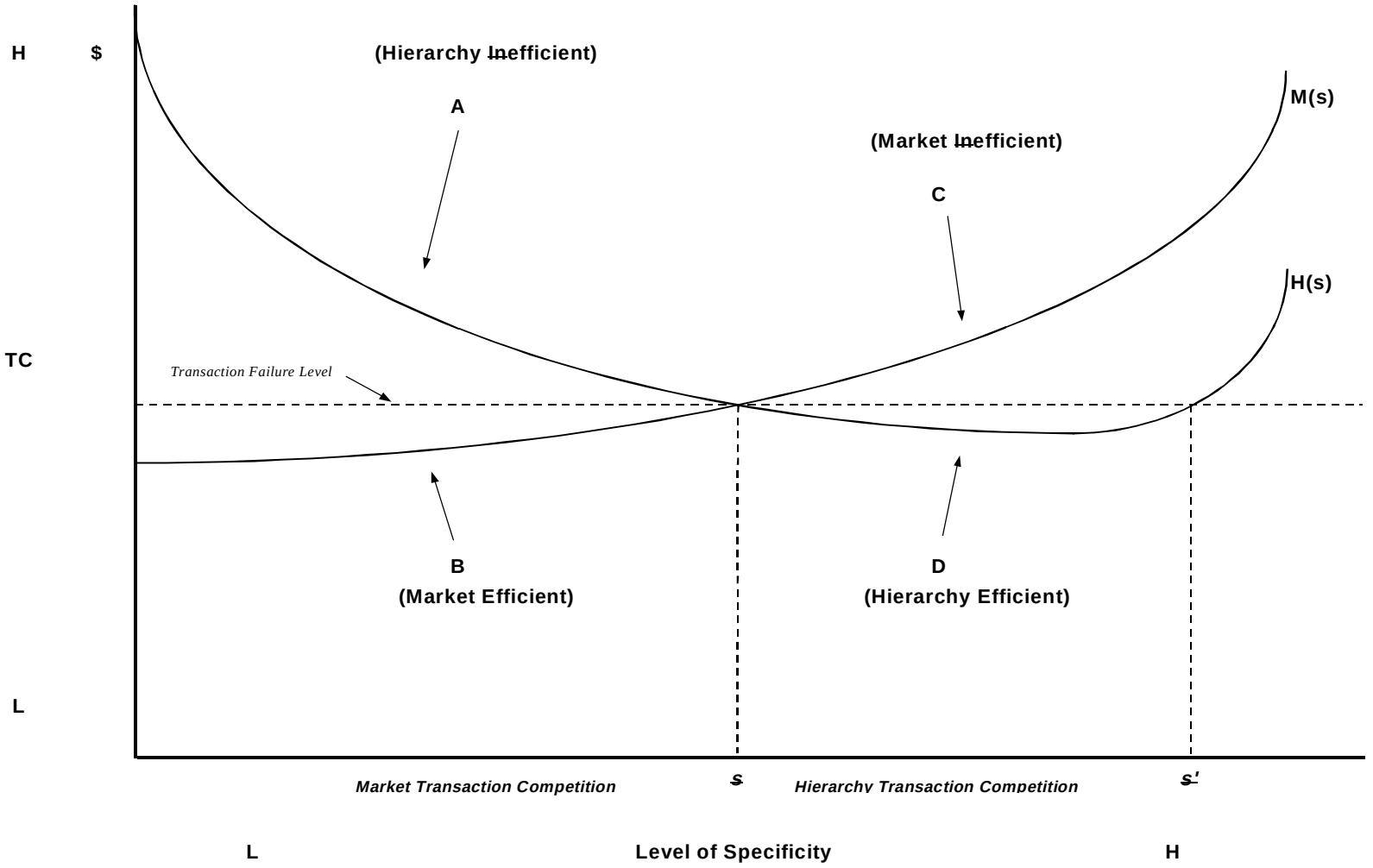


TABLE 2-9

Explanation of the Four Zones of Governance

Impacted by Specificity

A: Hierarchy Inefficient

Here a hierarchy makes it really bureaucratic to trade virtually identical items:

⇒ BR ↑ cost to coordinate / plan where a market is more efficient.

⇒ Opportunism ↑ costs to promise when instant market transacting is more efficient.

B: Market Inefficient

Here markets fail because transactions are so unique that only hierarchies can manage them:

⇒ BR generates costs to coordinate / plan that markets break down & hierarchies are needed.

⇒ Opportunism generates costs of erroneous promise when transactions are not instant.

C: Market Efficient

Here a market makes it really easy to trade virtually identical items:

⇒ BR is irrelevant because of similarities in the work.

⇒ Opportunism chances ↓ by instant transactions of substantially similar work.

D: Hierarchy Efficient

Here a hierarchy manages highly specific transactions:

⇒ ↓ BR costs of coordination / planning.

⇒ ↓ Opportunism costs of cheating (due to strong strategy: making the transaction so competitive that it is "selected for" in the exchange).

As illustrated in the foregoing analyses, it is the levels of bounded rationality, opportunism and specificity that impact the existence and governance of transactions. But what gives rise to higher or lower levels of BR, O, or S? The social friction argument advanced earlier suggests that Hayek's two information conditions are responsible for social friction and set the boundaries that determine whether these frictions help or hinder: (Condition 1) the mutuality of expectations and intentions between Other Persons and Individual transaction creators, and (Condition 2) the correspondence of those mutually subjective data with the objective facts.

The reader may now have observed that these information conditions impact both the nature of the tendency towards economic equilibrium, and the extent of transaction costs/social friction that affect efficiency equilibrium. Because the tendency towards an economic equilibrium, and the intervening help or hindrance introduced by social friction are both based on Hayek's Information Conditions 1 and 2, then it is toward the possibility of impacting the levels of social friction that we should turn our investigation, if we are to demonstrate a theoretical link from transaction cognitions through information, to the levels of bounded rationality, opportunism and specificity and transaction costs/social frictions, and on to high performance economic results.

The information (expertise) argument put forward in this section of the chapter opens the possibility that domain-specific expert scripts can be acquired and utilized to influence the level of help or hindrance of social friction on high performance economic results, by impacting transaction success. Since Transaction Cognition Theory advances the idea that Planning, Promise and Competition cognitions are the specific category of cognitions that have a direct influence on levels of bounded rationality, opportunism, and specificity (respectively); then for the argument to be complete, it is necessary to demonstrate how Planning, Promise, and Competition cognitions (and their counter-cognitions: Fatalism, Refusal, and Dependency) impact the two information conditions that set the boundaries that determine whether socioeconomic frictions will provide opportunity or disaster to economic actors. The final subsection of this chapter addresses this subject, explaining systematically how these concepts of friction and information combined in Transaction Cognition Theory, can be utilized to generate high performance economic results.

High Performance Economic Results

In the foregoing two subsections it has been argued that the tendency towards equilibrium sets up economic opportunity, and that the capability to utilize friction (by possessing and using Planning, Promise, and Competition cognitions/expert scripts) creates the high performance economic results. In this subsection, I shall attempt to explain the manner in which Transaction Cognition Theory suggests that this process is accomplished—developing in greater detail the idea of "using" expert transacting scripts to accomplish high performance economic results. To effectively provide this explanation, I shall first appeal to Simon (1981) and shall summarize his argument in support of the idea that a simple system can be utilized to explain and to thereby influence subsequent complex results, because this is the effect pattern that Transaction Cognition Theory asserts to be likely. With this foundation established, I shall then take the next logical step, which follows from the commonality resulting from Hayek's Conditions 1 and 2 being at the core of both the equilibrium and the friction explanations, and shall overlay the friction framework on to the four types of transacting as developed in the equilibrium argument. This should greatly aid in the explanation of how high performance economic results can be generated by planning, promise, and competition cognitions. Thirdly, I shall show how the 3 cognitive continua (Fatalism ↔ Planning, Refusal ↔ Promise, and Dependency ↔ Competition) alter the 2 Information Conditions to demonstrate how transaction cognitions effect economic results.

Expertise/Artifice

The process whereby human beings adapt internal systems to those of the environment is referred to as artifice (Simon, 1981). Simon asserts that this adaptation, or fulfillment of purpose, "involves a

relation among three terms: the purpose, . . . the character of the artifact[22], and the environment in which the artifact performs" (1981: 8). In terms of Transaction Cognition Theory, this adaptive process occurs among the purpose (or intentions) of Individual transaction creators, the character of The Work, and the social environment that is comprised of the Other Persons for whom the work must perform. High performance economic results (an important form of human artifice), therefore, occurs within this transaction set as specified.

The concept of artifice is central to understanding high performance economic expertise because it is through the existence of an interface between inner and outer environments, and the examination of that interface (how it is created, and how it operates), that researchers can come to better understand the processes by which high performance economic consequences are enacted. Further, it is through the virtues of this simplifying concept, that the essential relationships, which underlie the high performance economic phenomena, may be identified and clarified.

As noted previously, the assertions of Transaction Cognition Theory are based upon the idea that all high performance economic results begin with the success of the transaction. This simplifying assertion makes it possible to penetrate and to better understand economic and social phenomena that have been previously viewed to be highly complex and impenetrable (Scott, 1987). So the idea that it is not "inner" complexity, but "outer" complexity that shapes variability in the performance levels of economic outcome phenomena, is important as a justification for the approach toward theory development taken herein (focus on expertise—three relatively simple expert cognition sets in a relatively standard sequence—to explain high performance economic results).

Here an example cited by Simon, 1981 provides an illustration in support of the idea that apparent behavioral complexity is a reflection of the effects of an outer environment on the accomplishment of a simple objective:

> "We watch an ant make his laborious way across a wind-and-wave -molded beach. He moves ahead, angles to the right to ease his climb up a steep dunelet, detours around a pebble, stops for a moment to exchange information with a compatriot. Thus he makes his weaving, halting way back to his home. So as not to anthropomorphize about his purposes, I sketch the path on a piece of paper. It is a sequence of irregular, angular segments—not quite a random walk, for it has an underlying sense of direction, of aiming toward a goal.
>
> I show the unlabeled sketch to a friend. Whose path is it? An expert skier, perhaps, slaloming down a steep and somewhat rocky slope? Or a sloop, beating upwind in a channel dotted with islands or shoals? Perhaps it is a path in a more abstract space: the course of search of a student seeking the proof of a theorem in geometry.
>
> Whoever made the path, and in whatever space, why is it not straight; why does it not aim directly from its starting point to its goal? In the case of the ant (and for that matter the others) we know the answer. He has a general sense of where home lies, but he cannot foresee all the obstacles between. He must adapt his course repeatedly to the difficulties he encounters and often detour uncrossable barriers. His horizons are very close, so that he deals with each obstacle as he comes to it; he probes ways around or over it, without much thought for future obstacles. It is easy to trap him into deep detours.

[22] "An artifact can be thought of as a meeting point—an 'interface' in today's terms—between an 'inner' environment, the substance and organization of the artifact itself, and an 'outer' environment, the surroundings in which it operates" (Simon, 1981: 9).

> Viewed as a geometric figure, the ant's path is irregular, complex, hard to describe. But its complexity is really a complexity in the surface of the beach, not a complexity in the ant...
>
> These speculations suggest a hypothesis, one that could as well have been derived as a corollary from our previous discussion of artificial objects (emphasis added):
>
> *An ant, viewed as a behaving system, is quite simple. The apparent complexity of its behavior over time is largely a reflection of the complexity of the environment in which it finds itself.*
>
> We may find this hypothesis initially plausible or implausible. It is an empirical hypothesis to be tested by seeing whether attributing quite simple properties to the ant's adaptive system will permit us to account for its behavior in the given or similar environments" (Simon, 1981: 63-64).

In the case of explaining high performance economic results, the objectives are also relatively simple. The expert information processing theory literature reports observations of a simplifying regularity that appears in the cognitive sequence, that is likely to apply in the pursuit of economic opportunity. In a 1986 study, Leddo and Abelson noted that cognitive scripts occur in a decision order that begins with "entry" and then proceeds to "doing." Read (1987) also documents that scripts proceed according to a known or relatively standard sequence.

The transacting sequence is not exception. As noted previously, the decision sequence in the accomplishment of economic results often proceeds with the successive answering of the following age-old economic questions:

1. What can I exchange? (Have I something of economic value to offer?)
2. With whom shall I exchange? (Can I agree upon an exchange with another person?) and
3. Can I produce it? (Will I be able to deliver?)

Put in terms of Transaction Cognition Theory, the cognitive scripts required to support/or not support the accomplishment of economic results can be represented by the decisions that must be made to answer the foregoing questions, further complexity being primarily environmental. These choices can be represented in the decision tree shown in Figure 2-10.

As a general model, this representation permits us to simplify the use of information primarily to three steps in sequence. Each 3-step decision sequence applies to the use—through the employment of Competition, Promise, and Planning cognitions (in that order)—of transaction costs as social friction to produce high performance economic results (which have previously been defined in the case of the transaction, to mean that it succeeds v. fails). Thus, there exists a simple representation of the inner world of the seeker of high performance economic results.

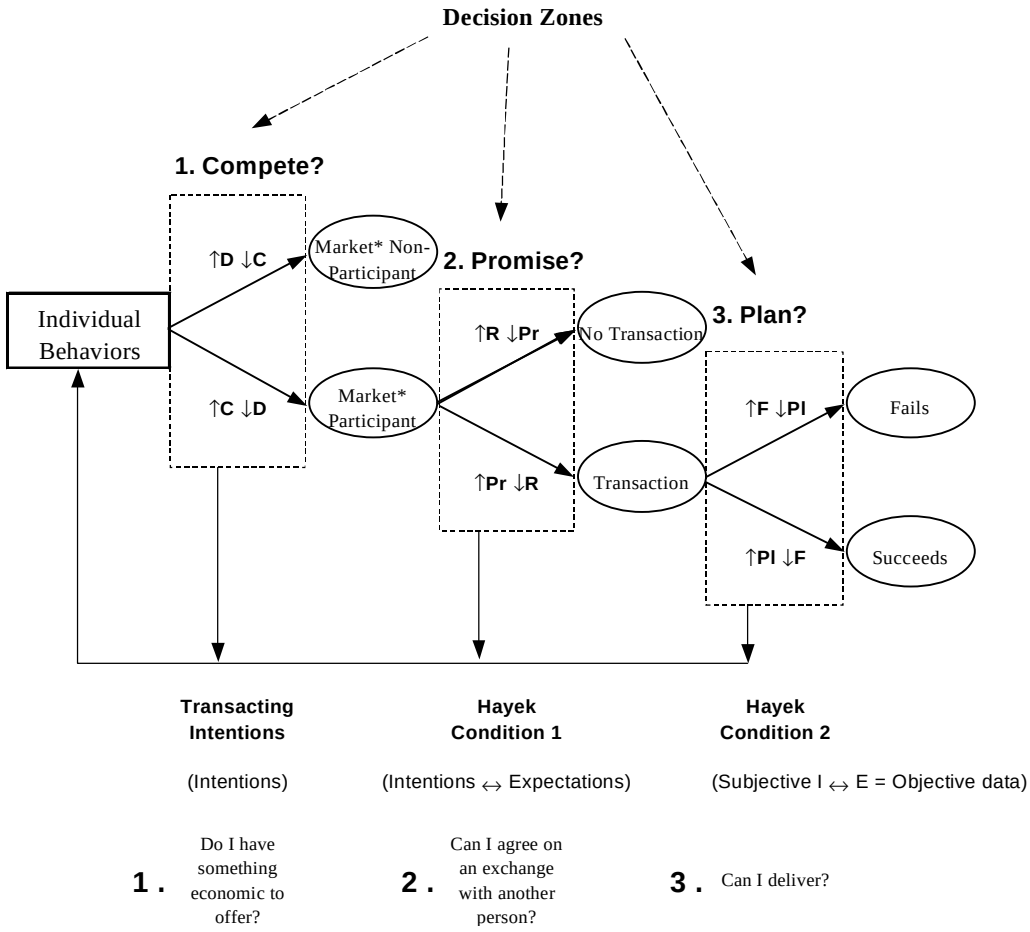
According to the Simon (1981) analysis, we can also map the manner in which the constraints of the objective (outer) world impinge upon a transaction through two of the three terms of the relation that characterizes it: the structure of the artifact itself (the Work), and the environment in which it performs (Other Persons). Simon simplifies this analysis further when he states, "In very many cases whether a particular system will achieve an particular goal or adaptation depends on only a few characteristics of the outer environment and (emphasis added) *not at all on the detail of that environment*" (Simon, 1981: 11).

It is toward such a "key factor" characterization of the outer environment that we now turn, describing through the combination of the concept of equilibrium with that of transaction costs/social friction, the few characteristics of the outer environment—along with the three decision points of the inner environment—that bear upon the efficacy of high performance economic expertise in contributing to the achievement of high performance economic results.

FIGURE 2-10

A Transaction Cognition Theory Model of

Individual Economic Decision-making Behavior



Cognitions:

1. **D**ependency ↔ **C**ompetition
2. **Re**fusal ↔ **Pr**omise
3. **F**atalism ↔ **Pl**anning

* Note: "Market" = market OR hierarchy

Friction and the Equilibrium Model

Transaction Cognition Theory thus suggests that the model describing the operation of the forces of equilibrium, which underlie the model represented in Figure 2-4, can be useful in suggesting productive courses of action for those who wish to accomplish high performance economic results. The foregoing arguments in this section of Chapter 2 suggest that to the extent transactions may be identified to exist within a given quadrant (I, II, III, IV), they are expected to respond to transaction cognitions in a systematic manner. Accordingly, the following relationships follow:

1. Transactions that are better governed by a market (**in**efficiently governed by hierarchy) within which sufficient accurate information is available will be found in Quadrant I.

2. Transactions that are efficiently governed by a hierarchy within which accuracy of information resides will be described by Quadrant II.

3. Transactions that are better governed by a market, but about which there is **in**accurate, inadequate, or false information, will be found in Quadrant III.

4. Transactions that should be efficiently governed by a hierarchy, but for which no accurate information is available should be described by Quadrant IV.

The fundamental transformation (FT) as asserted by TCE might therefore be seen as a special case of the general tendency towards equilibrium, which general case includes both an efficiency equilibrium FT, and an economic equilibrium FT. The autonomous (efficiency) fundamental transformation is thought to occur outside the bounds of artifice, occurring autonomously (Williamson, 1991). However, fundamental transformations based upon the tendency toward the other (economic) equilibrium are <u>not</u> thought to occur autonomously. Rather in this case, governance transformations based upon the tendency toward an economic equilibrium are very much within the influence of individuals who can utilize transaction cognitions to expand or contract the informational bounds of transacting possibility. Thus, transaction governance may also be fundamentally transformed by taking thought—and this idea is the key to better understanding and effecting the accomplishment of high performance economic results.

In the former (efficiency) case, central to the notion of autonomous market/hierarchy substitutions at the margin is the concept of small numbers bargaining. In essence, transaction cost economics holds that where bounded rationality, opportunism, and asset specificity exist under conditions of uncertainty and frequency of transacting, hierarchies form when markets fail. This occurs because in such circumstances, which it is argued occur quite commonly, large numbers bargaining is "*fundamentally transformed*" into small numbers bargaining: a condition of scarcity (often referred to in "hostage" terminology) (Williamson, 1985). But as aptly stated by Simon (1981), "Scarcity is a central fact of life. Because resources—land, money, fuel, time, attention—are scarce in relation to our uses for them, it is a task of rationality (taking thought) to allocate them" (Simon, 1981: 31). Or, put another way, " . . . to sell any good it is necessary to be able to exclude people from it" (Casson, 1982: 202)—an information-based accomplishment. Then in either case—whether naturally/autonomously, or by artifice—a condition of scarcity results, which gives rise to the phenomenon of fundamental transformation.

It is the autonomous social function of markets "to coordinate the decisions and behavior of multitudes of individual economic actors" (Simon, 1981: 81) in the allocation of scarce resources; and TCE suggests, where markets fail, to bring hierarchy into being (under the direction of the entrepreneur) to manage the coordinative role (Coase, 1937). According to Transaction Cognition Theory, it is the discretionary social function of Individual transaction creators to pay attention to the level of information adequacy, and through the use of transaction cognitions, to fundamentally transform the transacting

situation in ways that achieve high performance economic results. The outcome? Experts in generating high performance economic results may now be defined as those who can effect fundamental transformations (as defined).

Therefore, high performance economic expertise consists of the creation and control of small numbers bargaining opportunities (e.g. economic scarcity) such that transactions are fundamentally transformed to add value. This means that it is the business and function of these transaction creators to be actively engaged in the work of dealing with scarcity as it applies to both the supply of, and the demand for, the resources that—through the application of high performance economic expertise—may be influenced in such a way as to add value. How is this done? In the next portion of this subsection, concepts from the previous analysis of friction are overlaid upon the social equilibrium model to provide some suggested answers.

The Four Transaction States

A Combined Model. The effects of equilibrating forces on transaction governance have been previously represented in Figure 2-4. Figure 2-5 represents the effects of friction in both physical and social systems. As also noted previously, due to similarities in these two figures (Hayek's two Information Conditions provide a parallel foundation for both conceptualizations) it is possible to link the effects of information-based social friction shown in Figure 2-5 with the autonomous and information equilibrium states shown in Figure 2-4, to suggest four transaction states. These combinations are shown in Figure 2-11:

Opportunities for value creation exist in all four quadrants of Figure 2-11. In Quadrants I and II, these opportunities are realizable in the real world because the transactions described in these two quadrants actually can occur. Conversely, the opportunities that exist in quadrants III and IV are only realizable if they can be converted (fundamentally transformed using transaction cognitions, to invoke the forces of the tendency towards an information-based economic equilibrium) into transactions that then <u>can</u> occur in the real world: in a market (Quadrant I) and under a hierarchy (Quadrant II).

FIGURE 2-11

The Effects of Equilibrating Forces and Social Friction on

Transaction Governance

Info/Efficiency	**Efficient Market** (Low TC/Friction)	**Efficient Hierarchy (High TC/Friction)**
Adequate Information/Cognitions (Friction Helps)	I Tendency Toward Market Control w/ Efficiency **(Glide)**	II Tendency Toward Hierarchy Control w/ Efficiency **(Traction)**
Inadequate Information/Cognitions (Friction Hinders)	III No Control/Efficiency: Tendency Toward Non-Initiated Transactions **(Slippage)**	IV No Control/Efficiency: Tendency Toward Transaction Failure **(Drag)**

Thus, using transaction cognitions, it is theoretically possible to fundamentally transform transactions that are failing due to "slippage," by either: (1) creating traction, or (2) turning the slippage into glide. As noted earlier in the chapter, traction may be created from slippage by utilizing transaction cognitions (which includes minimizing counter-cognitions) relative to Hayek's Information Condition 1. That is—as earlier explained—the slippage occurs (Quadrant III) where there could be traction (Quadrant II) because expectations in the situation require high friction and only low friction intentions are available due to information problems. Thus opportunities exist through the acquisition of the requisite information, to take transactions that are presently not occurring in a market (slippage), and to fundamentally transform them such that they can occur under hierarchical governance (traction) because their informational properties can be altered—a kind of transactional genetic engineering.

Also as noted earlier in the chapter, glide may be created from slippage by utilizing transaction cognitions (which includes minimizing counter-cognitions) relative to Hayek's Information Condition 2. In this case the reader is reminded that slippage occurs (Quadrant III) where there could be glide (Quadrant I); but glide does not result due to mistakes about the actual situation. Once again, opportunities exist because through transaction cognition-initiated learning (aligning the subjective data possessed by Individuals and Other Persons with the objective data/facts in the real world) the transactions that are presently not occurring in a market (slippage) can be properly prepared for market governance (glide)—by altering their informational properties.

And also using transaction cognitions, it is theoretically possible to fundamentally transform transactions that are failing due to "drag," by either: (1) creating glide, or (2) turning the drag into traction. Glide may be created from drag by utilizing transaction cognitions (which includes minimizing counter-cognitions) relative to Hayek's Information Condition 1. That is—as earlier explained—the drag occurs (Quadrant IV) where there could be glide (Quadrant I) because expectations in the situation require low friction and only high friction intentions are available due to information problems. Thus opportunities exist through the acquisition and application of the requisite inter-party information (between Individual transaction creators and Other Persons), to take transactions that are presently not occurring in a hierarchy (drag), and to fundamentally transform them such that they can occur under market governance (glide) because their informational properties may be altered to strip away the frictions of hierarchy. Turning drag into glide results in the disaggregation of transactions that were previously bundled within a hierarchy.

And finally, as also noted earlier in the chapter, traction may be created from drag by utilizing transaction cognitions (which includes minimizing counter-cognitions) relative to Hayek's Information Condition 2. Transactional drag occurs (Quadrant IV) where there could be traction (Quadrant II); but glide does not result due to mistakes about the actual situation. Once again, opportunities exist because through transaction cognition-initiated learning (aligning the subjective data possessed by Individuals and Other Persons with the objective data/facts in the real world) to take the transactions that are presently not occurring in a hierarchy (drag) and to permit hierarchical governance to be efficient (traction)—by altering the function of the hierarchy to decrease the absolute level of friction (thus flattening the tails of the H(b), H(o), and H(s) curves in Figures 2-7, 2-8, and 2-9, as presaged earlier in the discussion).

These four types of transacting are expected to occur as described in the following illustrations:

Type I: **(Glide)** Type I opportunities occur in circumstances where a market is more efficient due to informational advantages. Here, high performance economic results consist of allowing/facilitating markets such that they can autonomously and efficiently govern transacting. Thus, Type I transacting is predicated upon the existence in society of a set of institutions that keeps the market "playing field" relatively fair (Mitchell, 1995) such that low friction/sufficient information transactions can succeed. Examples of Type I transacting include the stock market, commodities exchanges, and the like. These are not perfect markets, and so profits are still expected for Type I transacting, while huge volumes of transactions are successful in ongoing value-adding exchange relationships. "Market glide" aptly describes such transacting.

Type II: **(Traction)** Type II opportunities include all types of activity that derive from a combination of both organizing and informational advantages. These include hierarchies that exist, for example, as a result of: natural monopoly where a value advantage is derived through productivity (efficiency plus accurate information), natural site advantages, isolating mechanisms (Rumelt,

1987), etc. Thus, despite relatively higher frictions, hierarchies persist and add value, thus using these frictions to create "traction through hierarchy."

Type III: **(Slippage)** In area III an informational advantage is lacking in a situation where social friction is nevertheless low. The set of Type III "transacting" includes both problematic transactions in a market (those that lack sufficient information to conclude efficiently), and potential market transactions that never occur. Examples include situations that involve extensive haggling (inefficient spot markets) in the case of the former, or situations where entire categories of markets are missing such as markets that must manage transactions over time and distance (Olson, 1998) in the case of the latter. In addition, market slippage also describes the pool of transaction possibilities into which hierarchies, having become both inefficient and uninformed, debouch transaction factors for reorganization. As next suggested under Type IV transacting, due to the combined equilibrium-seeking effects of transaction friction and hindrance, one possible result for a failed hierarchy, then, is for transaction factors to exist in a condition of slippage, which is manifest after disaggregations such as the failure of firms, downsizing, etc., depending upon the level of analysis observed, which return transaction elements to the market. As discussed later in this section, Type III transacting conditions provide an opportunity for entrepreneurial insight to transform slippage into traction or glide through the use of transaction cognitions, which identify and facilitate the addition of the requisite information.

Type IV: **(Drag)** Type IV opportunity would include the potential for high performance economic results that can be gained through improving informational/cognitive advantages for hierarchies (traction), or for markets (glide), which might include: cost savings due to value sacrifices by productive workers (the timid) who seek out high performance economic governance (risk takers) e.g. (Knight, 1921), and the alteration of transactions to strip away the frictions that due to informational disadvantages are no longer manageable under hierarchy, and to add the informational properties that are required in a market (fungibility, discreteness, etc.) (Mitchell, 1992).

Viewed in terms of high performance economic results, it appears to be intuitively obvious that the situation described in Quadrant I is likely to be the most productive. However, in terms of optimality in the neoclassical economic sense, no conclusions in this regard should be drawn. As stated by Simon (1981):

> "In the literature of modern economics ... there is not one market mechanism; there are two. The ideal market mechanism of general equilibrium theory is a dazzling piece of machinery that combines the optimizing choices of a host of substantively rational economic actors into a collective decision that is Pareto optimal for the society. The *pragmatic* mechanism (of equilibrium - emphasis added) described by Hayek is a much more modest (and believable) piece of equipment that strives for a measure of procedural rationality by tailoring decision-making tasks to computational capabilities and localized information. It makes no promises of optimization" (Simon, 1981: 42-43).

Thus, with Transaction Cognition Theory as extended and elaborated to this point, we are now able to view the possibility set for the achievement of high performance economic results in quite pragmatic terms. That is, we have now constructed a model that explains how the achievement of high performance economic results (HPER) is connected to what we think about, as follows:

Transaction cognitions (P, P, C) ➔ Information Conditions (1 & 2) ➔ TC/Social Friction ➔ HPER.

How Transaction Cognitions Effect Economic Results

Earlier in this chapter it was suggested that due to transaction costs/social frictions and the tendency towards equilibrium—both efficiency and economic—transaction cognitions which alter the information content of transactions can make it possible to fundamentally transform transactions that are failing due to "slippage," by either: (1) creating traction where there once was slippage, or (2) turning the slippage into glide; and further, to fundamentally transform transactions that are failing due to "drag," by either: (3) creating glide instead of drag, or (4) turning the drag into traction. In this subsection this discussion is expanded, and the theoretical possibilities earlier suggested are examined for practicality—leading to the suggestion of examples that illustrate how these transformations may be utilized to accomplish high performance economic results.

As a foundation for the examples that follow, it is useful to note certain regularities that are implied in Figure 2-11 as updated and illustrated below in Figure 2-12. Note that the information-based transformation of each condition in which social friction hinders the completion of a transaction (slippage and drag) may be accomplished using approaches that are based on either one or both of Hayek's Conditions 1 or 2. Each situation described is based upon the assumption that there is a relatively standard sequence that most transaction creators utilize, as illustrated in Figure 2-10. Thus, it is fundamental to an understanding of the discussion that follows, that transacting intentions are assumed to be present (i.e. there is a commitment to participate in the market process either through hierarchy or market-based transacting: to compete; to have something—a Work—to offer). Otherwise (as Figure 2-10 illustrates) there is no market participation, and the following discussion is moot. It should also be recognized that the cognitive basis for this decision to engage in the marketplace is—for purposes of the following discussion—understood to require competition cognitions.

According to the decision sequence represented in Figure 2-10, market participants, therefore, face two subsequent decisions: (1) Can I agree on an exchange with another person; and, (2) Can I deliver? These two subsequent steps require, respectively, promise and planning cognitions, which are expected to produce the necessary output required by Hayek's Conditions 1 and 2, respectively. It is expected, therefore, that the cognitive scripts that lead to the four high performance economic result solution types shown in Figure 2-12 (creating: glide from drag, traction from slippage, glide from slippage, and traction from drag) should roughly follow the decision sequence shown in Fig. 2-10.

FIGURE 2-12

Possible Information-based Approaches to the Utilization of

Transaction costs/social friction in Affecting Transaction Governance

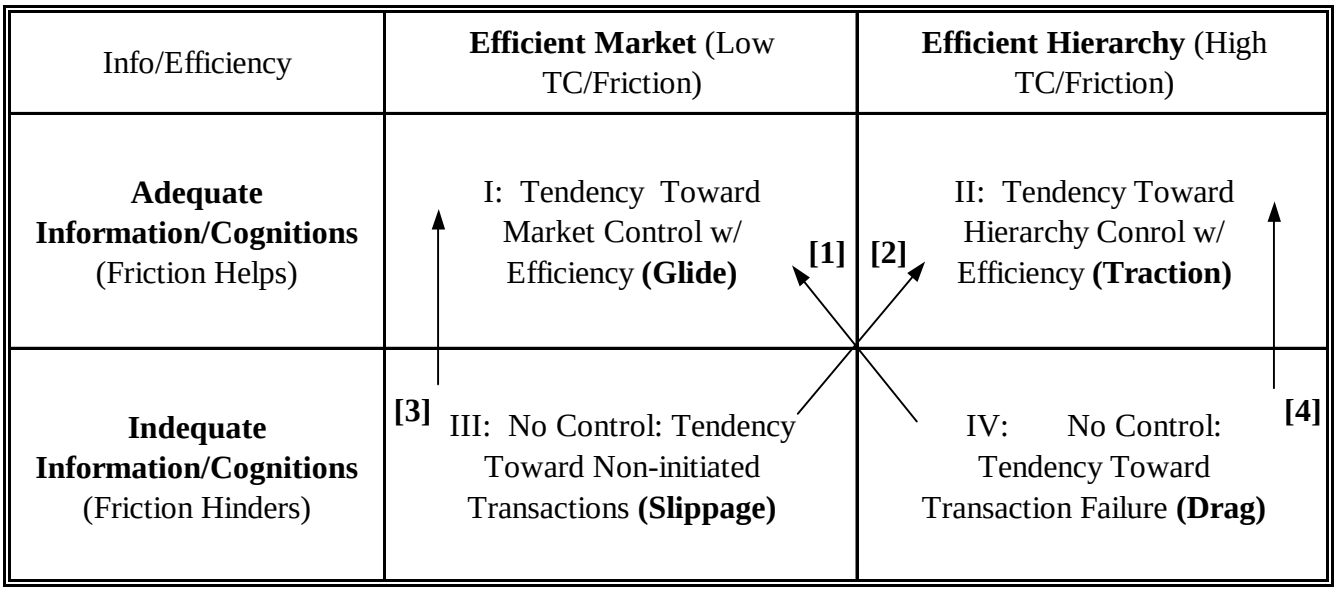


FIGURE 2-12 KEY:

Comprehensive (Social and Technological) Transacting Tasks:

1. Glide from Drag
2. Traction from Slippage

Specialized (Technological) Transacting Tasks:

3. Slippage to Glide
4. Drag to Traction

Comprehensive transacting tasks requiring inputs that are both social (intentions/expectation agreement), and technological (subjective/objective data agreement) appear to necessitate the use of both Condition 1 and Condition 2 approaches—i.e., Solutions (1) and (2)—which both alter the absolute levels of social friction, as well as "enable" the use of previously untapped friction, by rearranging the intentions and expectations in the transaction and aligning the subjective and objective data sets. As a result Solutions 1 and 2 illustrated in Figure 2-12 are expected to transform problematic or uninitiated market transacting into completed transacting that is managed by hierarchy; or vice versa: transform problematic or uninitiated transacting under hierarchy into completed transacting that is managed by the market. Presuming transaction intentions, Solutions 1 and 2, then, appear to require that both promise and planning cognitions—in that order—be brought to bear in problematic situations (slippage and drag): to

support decision-making, and to provide the information necessary to effect the needed transformation of the transaction.

Those approaches shown in Figure 2-12 that utilize only Condition 2 approaches—Solutions (3) and (4)—appear to only operate at a more specialized or technological level, to better apply the actual levels of social friction present by bringing the subjective and objective data sets into better correspondence with each other. In these two situations, it appears likely that planning cognitions will figure most prominently in decision-making and in the development of the information necessary to effect the needed transformation.

Thus, Figure 2-12 can be seen to illustrate a consistent feature of the fundamental transformation of problematic/uninitiated transacting. Condition 1 and 2-based solutions appear on the diagonal, suggesting that they invoke the forces surrounding an efficiency/autonomous equilibrium and the forces associated with effecting an economic equilibrium. "Condition 2 only"-based solutions appear as vertical transformations, suggesting that they leave the transaction costs/social frictions that effect autonomous (market ↔ hierarchy) transacting relatively untouched, but instead reformulate the use of existing levels of transaction costs/social friction by invoking the forces of an economic equilibrium only[23]. Let us now examine each approach in turn, with each solution being broken down further to illustrate how the three Transaction Cognition Theory transformation impacting continua (Fatalism ↔ Planning, Refusal ↔ Promise, and Dependency ↔ Competition) are implicated in the transformational approaches that are suggested by Transaction Cognition Theory to lead to high performance economic results[24].

1. Creating Glide from Drag (Decreasing social frictions, and enabling their use in a market)

Glide may be created from drag by utilizing transaction cognitions (which includes minimizing counter-cognitions) to alter the state of both of Hayek's Information Conditions 1 and 2. That is—as illustrated in Figure 2-12—the drag occurs (Quadrant IV) where there could be glide (Quadrant I) because expectations in the situation require low friction with few information problems, and only high friction intentions with many information problems are available. Thus—through the acquisition and

[23] This makes sense intuitively, since Hyek's Condition 2 presumes that Condition 1 is already in place, i.e., that there is agreement between Individual transaction creators and Other Persons as to intentions and expectations (respectively). We can derive from this observation that the process of arriving at an agreement between intentions an expectations is likely to have a much more far-reaching impact, reflecting the idea that transacting is much more a social process (to satisfy Hayek's Condition 1: achieving agreement between intentions and expectations of the parties) than it is scientific (to satisfy Hayek's condition 2: achieving correspondence between the subjective data—the previous agreement—and the objective data: the actual possibilities in the real world). This observation also leads to the conclusion that when problems arise in connection with Condition 2 (i.e. technological problems or problems of execution by one of the parties due to exigencies in the objective world), such problems have the potential to invoke the counter-cognitions: Fatalism, Refusal, and/or Dependency cognitions, a further obstacle that can compound the difficulty of "transaction turnaround."

[24] The reader should be alerted to return to these examples once Chapter 3 has been read, wherein the theory posited at this point in the argument is extended to comprise a multi-level theory. Thus, the market/hierarchy examples, which follow, should be positioned in the reader's mind as "localized examples" of a multi-level theory, with the necessary development and explanation to follow in a later chapter. Thus, the formation or disaggregation of hierarchical levels is conceptualized within Transaction Cognition Theory to operate according to a compositional theory, where the example solutions offered here are only one of the many cases that occur in moving up or down the aggregative ladder. Thus, while the examples herein describe how information might be utilized to create or to destroy firms, the basic approach should hold as it applies to the creation or disaggregation of industries, economies, etc. using these generalizable intervention strategies. Essentially the further development of these strategies could explicitly illuminate how information creates wealth.

application of the requisite inter-party information (between Individual transaction creators and Other Persons) through the use of Promise Cognitions, and intra-party information (between the parties' data and objective data) through the use of Planning Cognitions—opportunities exist to take transactions that are presently not occurring under hierarchy (drag), and to fundamentally transform them such that they can occur under market governance (glide) because their inter- and intra-party informational properties are altered to strip away the frictions of hierarchy, and the information disabilities of ignorance.

Thus, (to state the problem in highly literal terms) if the state of intentions (of the Individual potential transaction creator) in the situation is higher friction in nature, which implies that potential transaction creators (as the leaders of hierarchy at a given time) see only hierarchy-based methods to meet expectations; but the expectations (of Other Persons as the other potential transacting party) require a product or service that is lower friction in nature (which implies that Other Persons expect to transact directly in a market); and if the parties when in agreement are nevertheless mistaken about the objective facts; then opportunities appear likely to exist to utilize the antecedents of transaction costs/social friction (now presented in the decision-making order suggested by Figure 2-10)—specificity (S), opportunism (O), bounded rationality (BR)—to reshape the relationship and to bring a transaction, or a set of transactions into being:

- Where there are high S intentions/capabilities in the minds of Individual potential transaction creators about the Work in the potential transaction, and where opportunity consists of producing and/or managing low (or relatively lower) expected levels of S, then the first step in the transformation from drag to glide in this instance, consists of the use of Competition Cognitions in the creation/discovery of a version of the work (product or service) that enables continued participation in transacting. For this to occur, a market must be able to manage the transaction under the reduced social frictions/transaction costs that result from that opportunity—the chance (through the use of competition cognitions) to alter the level of specificity of the Work in the transaction to "stay in the game."

  Alternatively, where competition cognitions are absent or are cancelled to a material extent by dependency cognitions, no market participation would be expected. That is, in a situation where there is the possibility for high S intentions/capabilities to exist, or where they do exist in the minds of Individual potential transaction creators about the Work in the potential transaction, and where opportunity consists of producing and/or managing low (or relatively lower) expected levels of S, but these intentions do not materialize because they are replaced or stifled by a dependency cognition-based alternative, then—as suggested in Figure 2-10—non-participation in the marketplace (the opposite of high performance economic results) is the expected consequence.

- Next, where there are (in the minds of Individual potential transaction creators) intentions (e.g. beliefs) that the high O of Other Persons must be dealt with in the potential transacting relationship, and where opportunity exists should low (or relatively lower) expected levels of O be able to be efficiently managed by a market, then the second step in the transformation of transacting from drag to glide consists of the use of Promise Cognitions to prompt the creation/discovery of an exchange agreement that enables a revision of the intentions and expectations of Individual transaction creators and Other Persons such that a market may be able to manage the lower social frictions/transaction costs that occur coincident with that opportunity, and that arise due to insights that mitigate the expected opportunism of Other Persons in the transaction.

Alternatively, where promise cognitions are absent or are cancelled by refusal cognitions, no transaction would be expected. That is, in a situation where intentions exist regarding (e.g. beliefs in) the high O of Other Persons in the potential transacting relationship, and where opportunity exists should low (or relatively lower) expected levels of O be able to be efficiently managed by a market, but due to refusal cognitions there is no subjective agreement between the parties possible due to lack of trust, then—as suggested in Figure 2-10—it is expected that no transaction will occur (the opposite of high performance economic results).

1. Third, given step 1 (that transacting intentions exist on the part of transaction creators) and given step 2 (that these intentions and the expectations of Other Persons align to form a subjective data set), then the opportunity to employ planning cognitions to influence bounded rationality to transform the transacting process appears likely to be present. Thus, where there are BR constrained intentions in the minds of Individual potential transaction creators, and where opportunity suggests that successful transaction creators must manage under low (or at least relatively lower) levels of BR for problematic or nonexistent transactions to succeed, then the transformation of a drag situation to one characterized by glide consists of the use of planning cognitions in the creation/discovery (Kirzner, 1980) of a plan (course of action that aligns subjective and objective data) that enables a market to manage transactions with reduced social frictions/transaction costs (from the lower levels of BR in Individual transaction creators) that exist coincident to that opportunity. With such a plan transactions are expected to succeed v. fail.

   Alternatively, where planning cognitions are absent or are cancelled by fatalism cognitions, no transaction success should be expected. That is, in a situation where—resulting from the alignment of intentions and expectations—high BR exists, and where opportunity requires low (or relatively lower) levels of BR, but no plan materializes due to the replacement or stifling of planning cognitions by fatalism cognitions, then—as suggested in Figure 2-10—transaction failure (the opposite of high performance economic results) is the expected consequence.

In summary, according to Transaction Cognition Theory, Solution 1 for the creation of high performance economic results—the transformation of drag into glide—appears likely rest upon the successive application (please see Figure 2-10) of competition, promise, and planning cognitions, which might be described as follows. Problematic transacting in a hierarchy is first identified, and the intention to attempt to continue or to improve transacting, results in the reformulation of a lower specificity product or service offering. The resulting lower transaction cost/friction-intentions (the Work) matched in a market with Other Persons' expectations that are also lower transaction cost/social friction, then results in a subjective agreement upon an exchange. Finally, it is necessary to reduce bounded rationality sufficient to effect a transaction wherein the foregoing subjective agreement is enacted in the real world (accomplishing subjective/objective agreement) through the use of planning cognitions, which turn the agreement into reality[25].

[25] Unfortunately, most of those presently involved in the new business venture community have seized upon the writing and perfecting of a "business plan" as the key activity needed to ensure venture success. In my experience, it is the treatment of this "necessary condition" as a "sufficient condition" that lies at the root of the failure of so many new businesses. I agree that the preparation of a business plan is important; but alone this approach is incapable of enacting the promise and competitive relationships that are the other foundation elements upon which high performance economic results are based.

Examples that illustrate the process of turning drag (transactions that are failing under hierarchy) into glide (transactions that are succeeding in a market) occur where innovative insight brings into being transactions that were impossible under the governance of hierarchy, but which are not impossible under market governance. A recent example comes to mind to illustrate this kind of situation. It is the story of a farmer in Kansas whose innovative insight initiated previously nonexistent transactions, which have in turn expanded the returns from his farm machinery, and offer the prospect to expand such returns for many other farmers in similar circumstances.

A report filed from Kansas City, and broadcast on National Public Radio (Morris, 2000), tells how David Grovert, a farmer living about an hour's drive from Wichita, had an idea to make idle farm equipment available for rent to other farmers. Grovert reports that his primary tillage tractor—at a cost of close to $100,000—sits idle for all but a few days a year. He organized first a telephone-calling network, which he then migrated to the Internet, to match idle equipment with farmers who need this equipment and are willing to rent it. Through the creation of an information network that has created fully contestable price mediated transactions in a market (Williamson, 1985), the return on equipment investments has been increased, because a previously untapped category of transactions was brought into being. In this example, sets of non-existent transactions for assets in a hierarchy (presumably equipment owned by Grovert's farming entity) have been brought to fruition in a market, by altering their information content.

Consider now the theoretical process previously proposed, in light of this example: the successive application of competition, promise, and planning cognitions in the steps suggested in Figure 2-10. A tractor in a hierarchy sits idle for most of the year. Competition cognitions help Grovert to identify this problematic transacting situation, and the intention to attempt to improve transacting produces the reformulation of a lower specificity product or service offering (why not rent out the equipment?). Then, using promise cognitions, the resulting product offering, which has lower transaction cost/frictions (Grovert's Work), is then matched in a market with Other Persons' expectations that are also lower transaction cost/social friction (Other Persons wish to rent, not buy). To accomplish this, technology enters the picture (both telephone, and later the Internet), which helps Grovert and others who subscribe to the service to make subjective agreements (promises) upon rent-based exchanges. Finally, it is necessary to reduce bounded rationality sufficient to effect transaction wherein the foregoing subjective agreement is enacted in the real world (accomplishing subjective/objective agreement) through the use of the planning cognitions that turn the agreement into reality. Although not discussed in the radio broadcast, presumably the plan involves working out budgets, transportation details, maintenance schedules, etc., which, once accomplished, reduce the unknown (bounded rationality) to a point that the transactions which were failing/nonexistent under a hierarchy (drag) succeed in a market (glide).

The transformation from drag to glide may not be the most common type of high performance creating solution. But its level of frequency within a given economy is an empirical question that is beyond the scope of theoretical development. Therefore research is necessary to help those who are interested in high performance economic results to understand the incidence of this standard form of performance enhancement, when examined in various economic settings. But based upon my own experience, it appears probable that Solution 2, to be discussed next, occurs more often.

2. Creating Traction from Slippage (Increasing social friction and enabling its use)

The creation of traction from slippage (creating a firm to manage transactions that were problematic, or not occurring at all in a market) is the phenomenon we most often (but incompletely) view as entrepreneurship: Person X forms a company to provide a product or service previously not available in the marketplace. Traction may be created from slippage by utilizing transaction cognitions: planning, promise, and competition (which includes minimizing counter-cognitions: fatalism, refusal, and dependency) to alter the state of both Hayek's Information Conditions 1 and 2. That is—as illustrated in Figure 2-12—the slippage occurs (Quadrant III) where there could be traction (Quadrant II) because expectations in the situation lead to relatively higher transaction costs/social friction and due to information problems—without some sort of transformation—only relatively lower friction intentions are available with no plan to execute such exchanges should they be agreed upon. Opportunities exist to take transactions that are presently not occurring in a market (slippage), and through the acquisition of the requisite friction and information, to fundamentally transform them so that they can occur under hierarchical governance (traction) because their social friction and informational properties have been altered—a kind of transactional genetic engineering that is made possible through the use of planning, promise, and competition cognitive expertise.

Thus, if—referring now to Hayek's information Condition 1—the state of intentions (of the Individual potential transaction creator) in the situation is relatively lower friction in nature, which implies that potential transaction creators (as a group at a given time) see only market methods to meet expectations; but the expectations (of Other Persons as the other potential transacting party) require a product or service that is relatively higher friction in nature (which implies that Other Persons expect the coordination of hierarchy); then the following opportunities exist to utilize the antecedents of transaction costs/social friction (now presented in the decision-making order suggested by Figure 2-10)—specificity (S), opportunism (O), bounded rationality (BR)—to reshape the relationship and to bring a transaction, or a set of transactions, into being:

- Where there are relatively lower S intentions/capabilities in the minds of Individual potential transaction creators about the Work in the potential transaction, and where opportunity consists of producing and/or managing relatively higher expected levels of S, then the first step in the transformation of slippage into traction in this instance, consists of the use of competition cognitions in the creation/discovery of a way to bundle the transactions together under hierarchical governance that brings such potential transactions into being and helps them to succeed.

  Alternatively, where competition cognitions are absent or are cancelled by dependency cognitions, no attempt to form a firm/hierarchy would be expected. That is, in a situation where there is the possibility for relatively higher S intentions/capabilities to exist, or where relatively lower S intentions/capabilities exist in the minds of Individual potential transaction creators about the Work in the potential transaction, and where opportunity consists of producing and/or managing relatively higher expected levels of S, but these intentions do not materialize because they are replaced or stifled by a dependency cognition-based alternative, then—as suggested in Figure 2-10—the failure to form a firm when it might be formed[26] and be successful (the opposite of high performance economic results) is the expected consequence.

[26] In terms of Figure 2-10 the formation of a firm within the marketplace is considered to be taking the "market participation" alternative.

- Next, where there are relatively lower O/higher trust intentions in the minds of Individual potential transaction creators about Other Persons in the potential transacting relationship, and where opportunity exists if relatively higher expected levels of O could be efficiently managed by hierarchy, then the second step in the transformation of transacting from slippage to traction consists of the use of Promise Cognitions to prompt the creation/discovery of an exchange agreement that enables a revision of the intentions and expectations of Individual transaction creators and Other Persons such that a hierarchy may then be able to manage the higher social frictions/transaction costs that occur coincident with that opportunity, and that arise due to insights that mitigate the expected opportunism of Other Persons in the transaction.

  Alternatively, where promise cognitions are absent or are cancelled by refusal cognitions, no transactions would be expected from a hierarchy. That is, in a situation where intentions (e.g. beliefs) exist regarding relatively higher trust / lower O of Other Persons in the potential transacting relationship, and where opportunity exists should relatively higher expected levels of O be able to be efficiently managed by hierarchy, but due to refusal cognitions there is no subjective agreement between the parties possible, then—as suggested in Figure 2-10—it is expected that no transaction will occur (the opposite of high performance economic results).

- Third, given step 1 (that transacting intentions exist on the part of transaction creators) and given step 2 (that these intentions and the expectations of Other Persons align), then the opportunity to employ planning cognitions to influence bounded rationality to transform the transacting process appears likely to be present. Thus, where the intentions in the minds of Individual potential transaction creators are relatively lower BR, and where opportunity suggests that successful transaction creators must manage under least relatively higher levels of BR in the marketplace for problematic or presently nonexistent transactions to succeed, then the transformation of a situation of transactional slippage to one characterized by transactional traction consists of the use of Planning Cognitions in the creation/discovery (Kirzner, 1980) of a plan (course of action) that enables a hierarchy to manage transactions with higher environmental transaction costs/social frictions (from the higher levels of BR inevitable Individual transaction creators in the marketplace should the transactions be able to succeed) that exist coincident to that opportunity. With such a plan transactions are expected to succeed v. fail.

  Alternatively, where planning cognitions are absent or are cancelled by fatalism cognitions, no transaction success should be expected. That is, in a situation where—resulting from the alignment of intentions and expectations—relatively lower BR exists, and where opportunity requires relatively higher levels of BR, but no plan materializes due to the stifling of planning cognitions by fatalism cognitions, then—as suggested in Figure 2-10—transaction failure (the opposite of high performance economic results) is the expected consequence.

In summary, according to Transaction Cognition Theory, Solution 2 for the creation of high performance economic results—the transformation of slippage into traction—appears likely to rest upon the successive application (please see Figure 2-10) of competition, promise, and planning cognitions, which might be described as follows. Problematic transacting in a market is first identified, but the intention to attempt to continue or to improve transacting results in the

reformulation of a higher specificity product or service offering requiring a hierarchy to effect. The resulting higher transaction cost/friction-intentions (the Work) matched in a market with Other Persons' expectations that are also higher transaction cost/social friction, then results in a subjective agreement upon a new set of exchanges (e.g., a firm transacting with customers). Finally, it is necessary to reduce bounded rationality within the hierarchy while leaving it relatively higher in the marketplace in general, sufficient to effect transaction wherein the foregoing subjective agreement is enacted in the real world (accomplishing subjective/objective agreement) through the use of planning cognitions, which turn the agreement into reality.

Examples of this situation occur where innovative insight brings into being a whole category of transactions that were impossible under market governance, but possible under hierarchy. Three examples are included here (one each to emphasize[27] S, O, or BR as the key variable where innovative insight arises from competition, promise, or planning cognitions, respectively).

Specificity

An example where changes in specificity necessitate the transformation of transacting into management by a hierarchy for transactions to succeed occurs in the case of a generic product differentiation strategy (Porter, 1985). Those who have studied the product life cycle have noted that a difficulty arises in more mature markets: many imitation products (many kinds of toothpaste, many different wristwatches, etc.). The problem for a given transaction creator is therefore to gain and hold market share. To accomplish this, a relatively fungible product (Work) that may not be in demand in the market must be endowed, for example through advertising or other isolating mechanisms (Rumelt, 1987) with special features and benefits (whiter teeth, fresher breath, etc.), and with a brand identity that differentiates it within the marketplace.

Generally, the differentiation of a product is not easily accomplished by Individual transaction creators, and must therefore be undertaken through organization, or hierarchy. Here groups of people who are skilled in the processes of branding, etc. create an organization that can, in fact, accomplish the multitude of specialized tasks required in the differentiation process. Thus, by being able to change the level of specificity in the mind of Other Persons from low to high, added social frictions/transaction costs can actually turn market slippage into hierarchical traction. As suggested above, this is accomplished through the use of generic strategic thinking (Porter, 1985), a type of Competition Cognition, which enables the use of helpful social friction.

Opportunism

An example of changes in opportunism that necessitate the transformation of market transacting into the management of transactions by a hierarchy for transactions to succeed, occurs in the world of the arts and sports. Often, talented artists or athletes lack business acumen, because they concentrate on their specialties. As a result—especially early in a career—the works that are produced by these potential transaction creators are at risk of being undervalued, because of potential buyers' (Other Persons') opportunism. Stories of artists, athletes, who "got taken,"

[27] While each example emphasizes the utilization of one of the cognition/attribute sets (e.g. competition/specificity) the reader is also reminded that in each of these illustrations, the 3-step competition, promise, planning sequence may also be observed wherein: (1) transacting intentions are established using competition cognitions, (2) an intentions ↔ expectations agreement is reached using promise cognitions, and (3) the subjective agreement in #2 is aligned with the objective data using planning cognitions.

abound, and as a result, some number of problematic or non-occurring transactions exists at any given time.

Because of this problem, hierarchies (e.g. sports management agencies) that have trusted reputations develop to manage and/or bring such transactions into being. The costs for potential transaction creators of utilizing hierarchies to represent them are not trivial, involving large commission payments and coordination costs. However, where promise cognitions are able to reshape the information environment such that the potential and actual slippage that arises due to opportunism can be transformed into traction, these costs are willingly paid.

Bounded Rationality

Consider the case where it was once assumed (intentions of producers) that anyone who wanted to buy or sell a stock would contact a broker, get advice, etc., and then complete the transaction. For many people this worked well, and market-governed transactions therefore occurred. However, there still existed—untapped—an entire pool of potential investors (Other Persons) who, for example, could not feel comfortable engaging directly in these market-only transactions because perhaps they felt that they did not know enough, or didn't have the time to research a multitude of potential investments thoroughly enough to form their own portfolio, etc.

At some point, the idea of the mutual fund (a plan for enabling a hierarchy/organization to conduct the buy-sell transactions in behalf of a pool of investors) was introduced, which brought millions of Other Persons into the transacting relationship. Simply speaking, through the use of planning cognitions a plan to create mutual funds was made and executed, and the unmet expectations of Other Persons were matched with the intentions of the transaction creators. The added social frictions of hierarchy that included, for example, organizational and administrative costs did not damage transaction viability, because instead of the slippage (unmet expectations) there appeared traction. The consequent high performance economic results occurred (and continue to occur) because—due to a better plan produced by using planning cognitions—an unmet market need was/is fundamentally transformed into a transaction stream managed by a hierarchy. Through the use of Planning Cognitions the slippage resulting from bounded rationality was/is thereby transformed into traction.

Thus we see in the foregoing examples how the "diagonal" transformations suggested (Figure 2-12) may be conceptualized and enacted. Next, in the two sections that follow, the "vertical" (Figure 2-12) solutions are discussed. For high performance results Solutions 3 & 4, it is expected that transacting intentions and Hayek's Condition 1 have been met: that transactions are failing merely due to the lack of planning—matching the subjective agreement of the parties to the objective situation in the real world thus capturing the energy available in the tendency toward an economic equilibrium (Hayek, 1937).

3. Transforming Slippage to Glide (Enabling low social friction to be helpful)

Glide may be created from slippage by utilizing transaction cognitions (which includes minimizing counter-cognitions) relative to Hayek's Information Condition 2. In this case slippage (Figure 2-12) occurs (Quadrant III) where there could be glide (Quadrant I); but glide does not result due to mistakes about the actual situation. Once again, opportunities exist because through transaction cognition-initiated learning (aligning the subjective data possessed by Individuals and Other Persons with the objective data/facts in the real world) the transactions that are presently not occurring in a market (slippage) can be properly prepared for market governance (glide)—by altering their informational properties.

Opportunities therefore exist to take transactions that are presently not occurring in a market (slippage), and through the acquisition of the requisite information, to fundamentally transform them so that they can occur within a market (glide) because their informational properties have been altered—a kind of transactional genetic tuning that is made possible primarily through the use of planning cognitive expertise.

Thus, if transacting intentions exist as a result of competition cognitions, and if—referring now to Hayek's information Condition 1—the state of intentions (of the Individual potential transaction creator) in the situation is low friction in nature, which is in agreement with the expectations (of Other Persons as the other potential transacting party) who also require a product or service that is low friction in nature (which implies that Other Persons also expect the coordination of the market); then according to the decision-making order suggested by Figure 2-10 opportunities exist to utilize planning cognitions to lower bounded rationality (BR)—to add information to the relationship—and thereby salvage a set of possible transactions that are not occurring due to the lack of correspondence between the subjective agreement of the parties (the Individual transaction creator and Other Persons) and the objective data (the facts in the real world).

Once again, an example illustrates the point. In every marketplace, there may be presumed to exist information-starved transactions, which do not occur as a result of this deficiency. With the recent wide availability of sophisticated information technology to potential customers in some markets that have been inaccessible to the average person, these information deficiencies (bounds to rational decision-making) can be been redressed. Whereas in the past, trading (the actual buying and selling) of stocks, bonds, or futures contracts has been restricted to brokerage houses or mutual funds, it is now possible to utilize facilities available on the Internet to acquire the needed information (offer prices, performance data, etc.) and to complete transactions. The reported proliferation of "day trading" is one example.

Other services, such as E-Bay offer to add information to the auction intentions of potential transaction creators, thus also bringing into being transactions that otherwise simply would not have happened due to information paucity. In terms of Transaction Cognition Theory, the planning cognitions of transacting parties can be utilized to reduce bounded rationality, and to thereby create transactions that otherwise would not have been completed (for lack of a plan, the auction transacting intentions of Individual transaction creator sellers, though hypothetically in agreement with the expectations of Other Persons as potential buyers, would not have actually corresponded in the real world due to lack of information.) In this manner, market slippage may be transformed into market glide.

4. Turning Drag into Traction (Enabling high social friction to be helpful)

Turning hierarchy drag into hierarchy traction has primarily been the province of "turnaround management," and "turnaround insight." Turnaround management and insight is not merely limited to fixing companies (transaction bundles) that are "broken," although that role is certainly part of the job. In addition, turnaround insight enables transaction creators to conceive of entirely new management systems that transform problematic or under-performing transactions into high performance economic results.

Referring once again to Figure 2-12, Traction may be created from Drag by utilizing transaction cognitions (which includes minimizing counter-cognitions) relative to Hayek's Information Condition 2. In this case the drag illustrated in Figure 2-12 occurs (Quadrant IV) where there could be traction (Quadrant II); but traction does not result due to mistakes or lack of insight about the actual situation. Opportunities exist in this situation because through transaction cognition-initiated learning (aligning the subjective data possessed by Individuals and Other Persons with the objective data/facts in the real world) the transactions that are presently not occurring in a hierarchy (drag) can be properly prepared for

governance under hierarchy (traction)—by altering their informational properties. Opportunities therefore exist to take transactions that are presently not occurring under hierarchy—but could be—(drag), and through the addition of adequate information, to fundamentally transform them so that they can occur within an organization (traction) because their informational properties have been altered—once again, a kind of transactional genetic tuning that is made possible primarily through the use of planning cognitive expertise.

Thus, if transacting intentions exist as a result of competition cognitions, and if—under Hayek's information Condition 1—the state of intentions (of the Individual potential transaction creator) in the situation is high friction in nature, which is in agreement with the expectations (of Other Persons as the other potential transacting party) who also require a product or service that is high friction in nature (which implies that Other Persons also expect the coordination of hierarchy, i.e. to deal with a firm); then according to the decision-making order suggested by Figure 2-10 opportunities exist to utilize planning cognitions to lower bounded rationality (BR)—to add information to the relationship—and thereby salvage a set of possible transactions that are not occurring due to the lack of correspondence between the subjective agreement of the parties (the Individual transaction creator and Other Persons) and the objective data (the facts in the real world).

Here the emergence of the McDonalds hamburger franchise business illustrates how the turnaround insight from planning cognitions transformed the set of non-occurring transactions into a vast flow of successful ones. Prior to the fast food era in the USA, "eating out" regularly was a luxury that many people simply could not afford in either time or money. Thus many people did not participate in the transactions offered by the hierarchies/ businesses of the time. What was wrong? As discussed below, the market imperfections caused by the specificity and opportunism present at the time did not figure as significant impediments (i.e. transacting intentions and Hayek's Condition 1 were met), but a better plan was still needed.

Although some establishments had offered fast food, specificity was still relatively higher because, for example, even these restaurants bought supplies in spot markets, rarely taking advantage of economies of scale, and having to engage in personal supervision of food selection to assure quality. Food quality varied accordingly. As a result the product—food eaten out—was relatively higher in specificity, and its cost was also relatively higher, but not so high as to eliminate transacting entirely. In fact, due to demographic trends, the demand for hamburgers was well known, which created in the minds of potential transaction creators the intention to transact.

Before the emergence of McDonalds, opportunism relating to existing hierarchies was also relatively higher, but not prohibitive, as evidenced by the preexistence of the many hamburger fast food transactions before McDonalds. The demand for the cuisine of a particular restaurant appeared mainly to be constrained by limited capacity to advertise, with word of mouth being the primary means of communicating the product offering. The means for collecting payments for the meals served were also costly (credit card company processing fees, bad checks, etc.) if the volume of meals served were to be expanded beyond the known few regular customers. Thus, transaction costs from opportunism also contributed to the failure of many possible transactions, without necessarily causing the governing hierarchies to experience total transaction failure.

Thus, prior to the McDonalds franchise insight by Ray Kroc, transacting intentions may be assumed to have existed, though not in as optimal a configuration. Also, a variety of intentions $\leftrightarrow$ expectations alignments also existed; but were once again sub optimal. What was needed was an insight to take the drag occurring in the various hierarchies, and to turn it into traction. Generally

the situation that exists when a certain type of transactions is occurring, but not optimally, points to the need for planning (the alignment of the subjective deal desires by transaction creators and Other Persons). Thus, the McDonalds insight that made the real difference was primarily one of planning.

Hence, due to bounded rationality, an entire category of previously unsuccessful transactions: those with a bit more specificity and a bit more opportunism couldn't be enacted under hierarchical governance. According to Michael Gerber (Gerber, 1995), the McDonald brothers in San Bernardino, Ca. knew something that Ray Kroc didn't know: "It couldn't be done . . . because they had tried to expand and failed."[28] Hence the McDonalds brothers reportedly sold the rights to the name and burger production system for a relatively low price. Of course it was Kroc who then utilized the planning cognitions developed through the operation of his prototype in Des Plains, Ill., to codify the plan, and franchise the method[29].

Accordingly, the McDonalds franchise insight appear primarily to be a Hayek Condition 2 informational coup, that took a set of potential transactions that no hierarchy was managing—or at least that were being poorly managed by the existing product/service offerings—and reorganized and/or created a new set of hierarchies: standardized, franchised fast food restaurants. Of course the pizza, muffin, donut, etc., offerings that have since come on the scene are simply imitators of this insight. Also, it should be emphasized that it was the franchise—the ACTUAL BUSINESS PLAN—that was the critical insight that triggered the traction that has led to "billions sold."

Summary

Chapter 2 has been intended to accomplish two objectives: First, to set forth Transaction Cognition Theory as an integration of social cognition and transaction cost economic theories; and, Second, to develop the linkage between Transaction Cognition Theory and high performance economic results. In Section 2-1, the derivation of the transaction cognition model (Figure 1-1) has been explained. In Section 2-2, the dynamics of the model have been elaborated. In the first subsection, the concepts of equilibrium and social friction were more thoroughly explored. Two types of equilibrium were distinguished: economic, and efficiency. Then in the next subsection—analogous to the physical case—the four states of social friction (glide, traction, slippage, and drag) were derived and linked to the forces of equilibrium. In the final subsection, a Transaction Cognition Theory model of individual economic decision-making behavior was presented (Figure 2-10) and the four general "solution approaches" to the accomplishment of high performance economic results were explained and illustrated.

The ideas presented within foregoing chapter should be viewed as a foundation for the understanding and interpretation of the processes that lead to the high performance economic results that we have come, as people, to expect at many levels of economic analysis (the firm, industry, economy, etc.). In the following chapter, the multi-level implications of Transaction Cognition Theory are considered.

[28] An apt demonstration of the canceling effect of fatalism cognitions.

[29] Franchising appears to be an opportunity specifically because it is a method that systematically applies planning cognitions to situations where it is necessary for drag to be transformed into traction.

PART 2

IMPLICATIONS

CHAPTER 3
MULTI-LEVEL IMPLICATIONS
OF TRANSACTION COGNITION THEORY

Introduction

The idea that transaction costs are the economic counterpart to friction in physical systems (Arrow, 1969: 48; Williamson, 1985: 19) creates the foundation metaphor for a multi-level transaction cognition model. A multi-level transaction cognition model is necessary if suggestions for a general path toward high performance economic results are to be fully scalable, as suggested to be necessary by those who are studying sustainable development in a global setting (Prahalad & Hart, 1999).

However, the implications for the development of socioeconomic theory, of the physical/economic metaphor suggested by Professor Arrow (1969) have not been fully explored. For example, while the idea of social friction has been used as an illustration, e.g. to help readers to better understand the concept of transaction costs in economic systems (Williamson, 1981: 552)[30] the application of the metaphor to the development of a more rigorous set of theoretical expectations for better understanding high performance results in the economic setting has not yet been undertaken. In particular, the idea that there is comparability between physical and economic systems leads first, to the exploration of the possibility that—as in physical systems—levels of analysis in economic systems may be logically derived. In Section 3-1, this possibility is rigorously examined. Second, emerges the prospect that due to a more thorough understanding of the social forces at work, more efficient economic models may be discovered, because friction—as in physical systems—may both help and/or hinder the accomplishment of an economic objective, as more fully developed in the previous chapter. In Sections 3-2 through 3-6 of this chapter, some of the processes for utilizing social friction in the accomplishment of high performance economic results are explored in detail for each of the several levels of analysis within which human beings expect high performance economic results: individuals, firms, industries, economies, and societies. The remainder of this introductory section of Chapter 3 is utilized to set up and to describe the multi-level model that Transaction Cognition Theory helps us to envision.

Extension of the Physical/Economic Systems Analogy

As developed in Chapter 2, Williamson (1985) has provided the insight that the sources of market imperfection—bounded rationality, opportunism, and specificity—are related to the process of social organization. Transaction Cognition Theory articulates an explicit connection between economic results and the economic cognitions related to three primary forms of socioeconomic interaction (planning, promise, and competition) using basic relationships that—by logically extending the fundamental friction metaphor—appear likely to apply at various levels of analysis. By demonstrating more fully the extent to which transacting attributes affect forms of social organization, the power of Williamson's original insight[5] may be seen.

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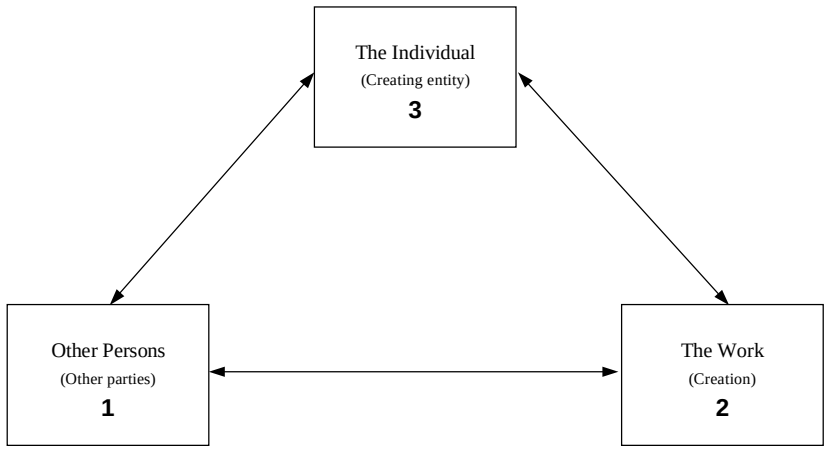
[30] "With a well-working interface, as with a well-working machine, these transfers occur smoothly. In mechanical systems we look for frictions: do the gears mesh, are the parts lubricated, is there needless slippage or other loss of energy? The economic counterpart of friction is transaction cost: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

An example from a field that has already constructed such a model is helpful in the exploration of the friction metaphor for clues that might suggest a path toward the logical derivation of level of analysis components in economic systems. In the field of chemistry the Periodic Table of Elements (please see Appendix 1) provides such an example, illustrating the combinations that result in the multi-level relationships evident in physical systems. Based upon the planetary model of the atom, the Periodic Table charts the relationships among the multiple levels of matter that aggregate to form physical phenomena. The Periodic Table illustrates at least the following: (1) how sub-atomic particles (e.g. protons, electrons, etc.) combine into atoms/elements, (2) how—based upon these subatomic particles—the elements may be grouped, and (3) how sub-atomic particles affect valence, the relative capacity to unite, react, or interact to form compounds (e.g., the Periodic Table is divided into sections by color that indicate the relative inertness or volatility of the elements that result from the behavior of electrons).

When we then use the Periodic Table as a guide for the extension of the physical/social system analogy to prompt a more rigorous understanding of level of analysis issues in economic systems, we immediately confront the necessity for a counterpart model in social systems (of the atomic model in physical systems). Fortunately, such a model has been suggested (Csikszentmihalyi, 1988; Gardner, 1993) and it is illustrated in Figures 1-1/3-1.

FIGURE 3-1

The Components of a Basic Transaction



Based on Gardner (1993)

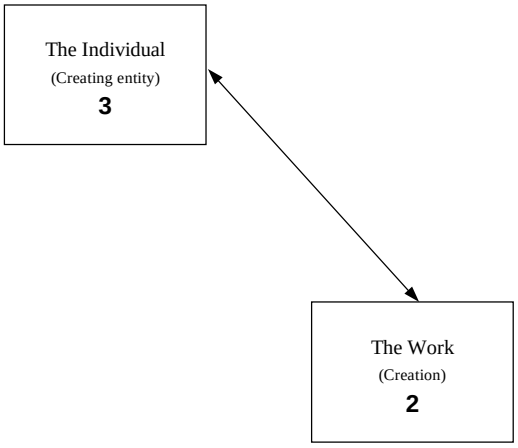
In economic systems, I propose that the counterpart to the atom in physical systems is very likely to be the transaction, in which an Individual creates a Work for Other Persons. The three-part model in Figure 3-1 illustrates, in essence, what can be asserted to be the fundamental unit of "economic matter." A short proof is necessary to sustain this point.

Through the use of the simple falsification technique that requires the removal of each component part in turn and the assessment of the consequences of each removal, it can be shown that the three parts in Figure 3-1 are both necessary and sufficient to explain the existence of a transaction. Thus, by removing each part in turn, it can be demonstrated that no economic activity results from the reduced models; that is, that in each instance the transaction fails.

To demonstrate, let us first remove component **1** (Other persons) from the model. In this case, we would encounter the situation illustrated in Figure 3-2. Figure 3-2 illustrates a situation where a creating entity continually stockpiles work that has no destination[31]. We observe that no transaction can occur under this condition.

FIGURE 3-2

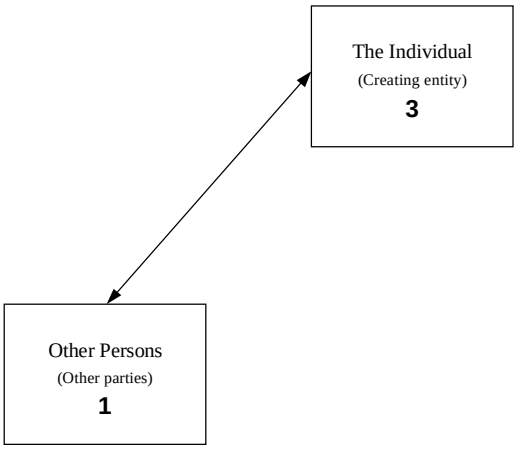
Basic Transaction Proof: Step 1



After removing component **2** (The Work) from the model, we would encounter the situation illustrated in Figure 3-3. Figure 3-3 illustrates a situation where a creating entity fails to produce anything. We again observe that no transaction can occur under this condition either, there being nothing to sell.

FIGURE 3-3

Basic Transaction Proof: Step 2

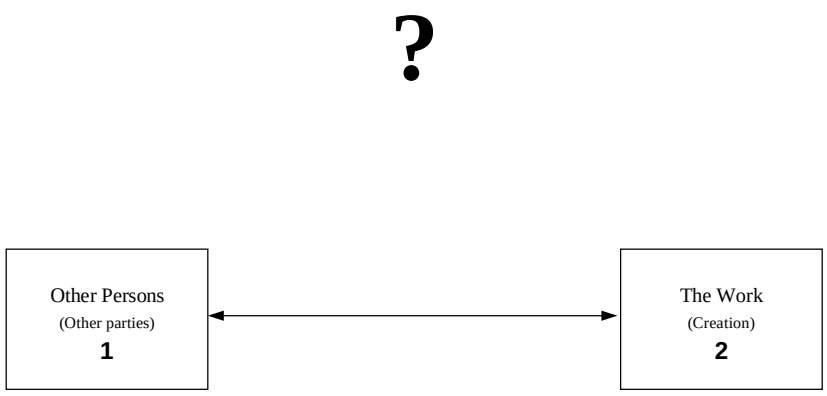


[31] I heard a group of retailers once refer to this condition to be consistent with the FISH inventory flow assumption (analogous to FIFO or LIFO) which was taken to mean "first in, still here"!

In the third step, we analyze the situation represented in Figure 3-4. Here we have removed component **3** (The Creating Entity) from the model.

FIGURE 3-4

Basic Transaction Proof: Step 3



Although in this hypothetical instance, a Work is supposedly for sale to Other Persons, without a Creating Entity, such a situation is impossible, and therefore must be treated as "undefined" in the model.

Finally, we can return to Figure 3-1 to test in our minds whether all three of the model components now shown to be necessary, are sufficient to create the economic event that we have termed: the transaction. We observe that—at a minimum[32]—it takes at least a Creating Entity, a Work, and Other Persons to enact a social situation wherein an exchange relationship creates a work that is of value to the parties. The fundamental economic unit—a transaction—has therefore been defined as an exchange relationship that creates work of value to the parties. Further, it may be expected that each of the three parts is necessary to the transaction, and that together they are sufficient to form that transaction.

Application to Suggest a Multi-level Model

The foregoing analysis has established that a simple socioeconomic model of the transaction can be proposed that is analogous to the planetary model of the atom. As investigators of a multiple level model, we are therefore free to examine some of the various possible aggregations of transactions to derive the customary (and later on perhaps some of the not so customary) levels of economic analysis.[33] For example, we may conceptualize a firm to be an aggregation of transactions, as illustrated in Figure 5.

[32] At present it is not known how many additional components may be added to a given transaction. Practically speaking it appears that the upper bounds may be assumed to be infinite.

[33] As in the physical world the capability to conceptualize various combinations of elements does not presume the skill necessary to effect in actuality such combinations. It should be assumed that the methodology for combining transactions in to smaller or larger clusters must occur according to laws in the transacting environment that must also be identified and understood to be effective.

FIGURE 3-5

The Firm as an Aggregation of Transactions

Then, as illustrated in Figures 3-6 and 3-7 an industry and an economy could be illustrated as higher-level aggregations of transactions.

FIGURE 3-6

Industries as Aggregations of Firms

FIGURE 3-7

An Economy as an Aggregation of Industries

Continuing the analogy, then, when we examine the Periodic Table of Elements we can see that the relationships at a particular level of analysis (the element/atom) depend upon the more fundamental relationships at lower levels of analysis (the arrangement of sub-atomic particles). We

can also see that each level has its own terminology for the analysis and description of phenomena that are not multi-level (Appendix 1). That is, the periodic table of elements contains both multi-level and single-level information. Information contained in the block in the periodic table for each element includes subatomic (protons, electrons, neutrons), atomic (the elements themselves, atomic number = the number of neutrons), and atomic category (elements that exhibit like behaviors, based upon the number of electrons in the outer ring/electron orbit). The next level of analysis, the molecular level (e.g. H_2O) is a combination of elements that is connected based upon the type of electron sharing (e.g., covalent or ionic bonding).

One point that we draw from this analogy, is that—with a properly specified model—one can discuss either the impact of subatomic particles upon the atomic or perhaps the molecular level across levels; or one can confine the analysis to a particular level (e.g., count the number of known elements). And, the foregoing illustration suggests that specifying the key factors in the transaction cognition model (Figure 3-1) at relevant[34] levels of analysis might be helpful if it is indeed feasible. As previously shown, the key factors in the transaction cognition model are divided into two groupings:

Group 1—Transaction Components:

- Creating Entity (Individual)
- Others
- The Work; and,

Group 2—Transaction Cognitions:

- Planning Cognitions
- Promise Cognitions
- Competition Cognitions.

As further explained in the paragraphs that follow, the levels of analysis considered within this chapter include the following:

- Transaction
- Opportunity
- Individual

[34] The levels of analysis specified in this monograph are not intended to be exhaustive; but are rather intended to be sufficiently illustrative that the underlying pattern of relationships can be demonstrated clearly.

- Firm
- Industry
- Economy
- Society.

With very few refinements to the model, a multi-level specification of Transaction Cognition Theory has now been made been possible. Thus, due to the necessity to select the "individual" level of analysis as one of importance to theory development, the transaction component previously identified as "the individual," may—for purposes of a multi-level theory—be relabeled "creating entity," as noted above. Other necessary refinements will also be described as the argument progresses.

From the foregoing analysis, we may then construct a table that presents the general elements of the model. That is, once it has been established that the transaction has a basic form, and that subsequent levels of analysis may be seen to be aggregations that are based upon this foundation, it does not seem to be too great a leap of the imagination to suggest that the form, itself, is pervasive: That we should expect to find at each level of analysis a Creating Entity, Other Persons, and the Work. Thus Table 3-1 is suggested.

It may seem overwhelming to the reader to be confronted with such an array of constructs and proposed relationships all at once. However, in the interests of clarity, and for ease of future reference, it has seemed reasonable to me to lay out the framework that forms the substructure of the arguments to come, realizing that in doing so, it will be necessary to appeal to the reader to withhold judgment on the veracity of the relationships at first merely summarized in advance, until the related arguments can be more fully developed. A brief summary of the construct definitions and suggested relationships for each proposed level of analysis follows.

TABLE 3-1

Examples of Possible Transaction Components in

Transaction Cognition Theory

At Multiple Levels of Analysis

Level	Creating Entity	Others	Work
Transaction	Powers	Wants	Product/Service
Opportunity	Product/Service	Features/Benefits	Entrepreneur
Individual	Entrepreneur	Customers	Firm
Firm	Firm	Stakeholders	Value Network
Industry	Value Network	Market	Capabilities/Core Tech.
Economy	Cap./Core Tech.	Exch. System	GDP
Society	GDP	Values System	Standard of Living

The Transaction Level

As noted previously in Chapter 1, a socioeconomic situation is necessary to satisfy many if not most of the human requirements for existence, because as individuals our "wants" exceed our "powers," while in the social state powers exceed individual wants. Through exchange, and due to different perceptions of value, the sum of society's powers is more effective in meeting the wants of individuals than are the powers of the individuals alone (DelMar, 1968 (1896): 2). Thus, the powers of creativity that exist within the social v. the solitary situation provide the Creating Entity that can—through the generation of products or services Work—provide for the wants of Others through the medium of the Transaction.

The Opportunity Level

Where products and services exist as "Works" of Creating Entities, then—due to market imperfections (that adhere to transactions as previously explained in Chapters 1 and 2)—certain work is required to match the features and benefits of these products/services with the Others who may wish to consume them. In the literature, opportunity recognition is one of the primary "works" of the entrepreneur (Kirzner, 1997; Kirzner, 1982). Thus, opportunity calls forth the entrepreneur to match the producers of products/services (Creating Entities) with the consumers of features/benefits (Others).

The Individual Level

At the individual level of analysis, the entrepreneur is the creating entity who creates a firm to serve customers. Transaction cost economics suggests that firms are formed by individual entrepreneurs who direct production when they see ways to enact transactions that would otherwise fail due to the transaction costs introduced by market imperfections: that firms form when markets fail (Coase, 1937).

The Firm Level

Firms can also act as Creating Entities. That is, the firm has been conceptualized as the means whereby value networks are assembled to serve stakeholders (Mitchell, Agle, & Wood, 1997; Rowley, 1997). At the firm level of analysis, then, the Work produced is a value network that serves stakeholders as Others in the model.

The Industry Level

Value networks exist beyond firms. It has been suggested that value networks are the Creating Entities for the capabilities and core technologies of an industry, which serve a market for this aggregation of product/service transactions (Christensen, 1997).

The Economy Level

Based upon the foregoing aggregative process, it seems logical to suggest that the capabilities and core technologies of economies serve as the Creating Entities that produce gross

domestic product (GDP), the Work of an economy, which serves Others through a system of exchange.

The Society Level

It is the GDP of a society that effectively produces one of the primary Works of any society: a given standard of living for its citizens (Durant, 1935). Accordingly, GDP can be conceptualized as a Creating Entity of sorts, which operates to generate a type/style/standard of living consistent with the values system of its beneficiaries, the Others in the model.

It is worthy of note that GDP at the society level of analysis is analogous, and might even be thought to be identical to the "powers" of society as defined at the transaction level. These parallels also seem to exist for Others and Work as well: a values system being quite similar in concept to "wants" and standard of living being conceptually related to the products/services available to the members of that society. Thus, Table 3-1 might more properly be thought of as a cylinder, connecting top and bottom to form a level of analysis "round." As the model is subjected in later sections, to scrutiny using generally accepted standards for the construction of multi-level social theory, other such regularities will be discussed and evaluated.

It should also be noted by the reader that Table 3-1 shows seven levels of analysis, along with possible transaction components at each level. At each level, the labels in the boxes that make up the triangle model shown in Figure 3-1 might be replaced with the components shown.

Moving on to the balance of Chapter 3, as indicated in the Introductory Chapter, the following sections of this chapter have been devoted to the detailed examination of the relationships discussed briefly here, which have only been presented here in abbreviated form in support of the arguments wherein the practicality of a multi-level theory of transaction cognitions is suggested. Immediately preceding these sections is a discussion of the standards for the development of multi-level theory, and subjection of the model to these standards as a foundation for further thought on these matters.

Section 3-1: Standards for the Development of Multi-level Theory

To properly specify a multiple-level model in social theory, it is helpful to employ the necessary terminology. Rousseau (1985) provides such a foundation.

According to Rousseau, multi-level models flow from a basic proposition where components have meaning at several levels of analysis. She uses as an example the assertion that power (at many levels) has been argued to derive from the control of uncertainty (at many other levels) (Thompson, 1967). Furthermore, Professor Rousseau argues, multi-level models often require or facilitate contributions from different disciplines (Rousseau, 1985: 22). Rousseau, in fact, cites Lazlo (1972) to argue that multi-level theory is one of the ideals of science, wherein " . . . the many entities investigated by the diverse empirical sciences would be plotted on a map of hierarchical organization and the theories applicable to them could thereby be interrelated" (Rousseau, 1985: 24); and wherein a synergistic increase in knowledge may be realized through the recognition of patterns across levels.

The implications of multi-level theory development as envisioned by Rousseau as they apply to the explication of Transaction Cognition Theory are as follows: First, the adoption of an interdisciplinary approach to research; Second, theoretical specification and empirical confirmation at and of a hierarchy of levels; Third, possible difficulties in matching theoretically corresponding levels

with empirically known entities (Berlinski, 1976); Fourth, a well-defined hierarchical schema. Analysis of multi-level Transaction Cognition Theory begins with this fourth implication.

For the hierarchical schema suggested by Transaction Cognition Theory to be well defined, a closer examination of definitions and the application of multi-level research terminology is necessary. According to Rousseau's framework, it appears that Transaction Cognition Theory at least produces constructs that are: (1) multi-level, (2) cross-level, and (3) compositional. Each set of criteria is discussed in turn.

Multi-level Theory

Multi-level constructs occur in theories that can be generalized across levels. As such, critical uniformities are required. In the physical case, under the previously cited Chemistry example using the Periodic Table of Elements, the proton-electron relationship in the atom has implications for atoms/elements, molecules, etc. In the case of Transaction Cognition Theory, the identification of three sets of constructs that represent the individual, others, and the work at multiple levels; or, the specification of three general sets of cognitions—planning, promise, and competition cognitions—at multiple levels, would also be considered to be developing a multi-level theory.

Cross-level Theory

Cross-level theory occurs where independent and dependent variables exist on different levels of analysis. In the physical example case, the dependent variable—atomic number—depends upon an independent variable—the number of a particular type of subatomic particles: neutrons—at a lower level of analysis. In the case of Transaction Cognition Theory, it can be seen that, for example, the "work" at the next lower level of analysis becomes, in essence, the "creating entity" at the immediately higher level as illustrated in Table 3-2, confirming that Transaction Cognition Theory is also a cross-level theory.

Earlier, in a note to Chapter 2, another cross-level aspect of Transaction Cognition Theory was introduced: the concept of relative markets. The concept of relative markets is a more general form of transaction cost economic (TCE) theory, according to the following logic (previously presented in the footnote).

At a given level of analysis it can be assumed that there is a market/hierarchy tradeoff. That is, depending upon the degree of transaction costs relative to that level of analysis, hierarchy will further coalesce, or will not (thus hierarchy v. market at any given level of analysis). The non-coalescence of transactions into further, more aggregated bundles (high levels of analysis) may thus be viewed as a "relative market." Relative markets, therefore, may be thought to exist at each level of analysis, and as further discussed in the following subsection, because of the compositional implications of this assertion. A full development of the concept of relative markets is left for future research.

TABLE 3-2: An Illustration of How Cross Level Transaction Components in Transaction Cognition Theory Build Multiple Levels of Analysis

Level	Creating Entity	Others	Work
Transaction	Powers	Wants	Product/Service
Opportunity	Product/Service	Features/Benefits	Entrepreneur
Individual	Entrepreneur	Customers	Firm
Firm	Firm	Stakeholders	Value Network
Industry	Value Network	Market	Capabilities/Core Tech.
Economy	Cap./Core Tech.	Exch. System	GDP
Society	GDP	Values System	Standard of Living

Composition Theory

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 specification of a compositional model requires perceptual agreement upon functional similarity. Thus, in the physical case, there has been an observed effect of electrons across levels. Similarly, in the case of Transaction Cognition Theory, it can be demonstrated, for example, how the nature of promise cognitions at a higher levels of analysis shape the nature of promise cognitions at lower levels as illustrated in Table 3-3.

TABLE 3-3

Composition Links Across the Social Component in

Transaction Cognition Theory

At Multiple Levels of Analysis

Level	Creating Entity	Others	Work
Transaction	Powers	Wants	Product/Service
		↕	
Opportunity	Product/Service	Features/Benefits	Entrepreneur
		↕	
Individual	Entrepreneur	Customers	Firm
		↕	
Firm	Venture	Stakeholders	Value Network
		↕	
Industry	Value Network	Market	Capabilities/Core Tech.
		↕	
Economy	Cap./Core Tech.	Exch. System	GDP
		↕	
Society	GDP	Values System	Std. of Living

Thus, as noted earlier, the values system of a society shapes and defines its wants, while at the same time it delineates acceptable standards for the exchange system. In turn, the nature of acceptable exchange systems defines the characteristics of markets, which in turn shape the kind and expectations of stakeholders, customers, product feature and benefits, etc. This provides evidence of functional similarity across levels as is required for a properly specified compositional model.

Because a properly specified compositional model is prerequisite for the specification of multi-level models, it is important to examine briefly some of the underlying research and logic that further suggests support for the compositional attributes asserted to apply to Transaction Cognition Theory. That is, it is useful to inspect the process that implicitly underlies the aggregation of transactions: the idea of sets of aggregated cognitions that apply within observable human groupings/transacting communities. Most of us rightly understand that cognitions occur within the mind of human beings as individuals (Neisser, 1967). Support for the compositional model aspect of Transaction Cognition Theory may be taken from an answer to the question: Is there support in the literature, for cognitions that operate at the other levels of analysis beyond the individual (firm, industry, economy, etc.) as suggested by Transaction Cognition Theory?

Research on the idea of organizational learning provides the foundation for such an answer. The notion of organizational learning has been one of the ideas that are at the heart of psychology's so-called cognitive revolution (Baars, 1986). Within the organizational learning literature it has been suggested that cognitive maps exist and endure in organizations beyond the movements of its members (Daft & Weick, 1984). Organizational learning has been defined as "the process by which certain knowledge about action dominates the organization's relationship with its environment" (1984: 286). Organizational cognitions are thought to be mental models that emerge within "communities of cognition" (Baumard, 1999: 15). Research has documented that mental models of transactions have defined and to some extent created economic sectors, such as, for example, the knitwear sector of the garment industry in Scotland (Porac, Baden-Fuller, & Howard, 1989). Thus, it appears appropriate to consider—for purposes of justifying the compositional aspect of Transaction Cognition Theory—that cognitions can and do exist outside the individual that are systematic to various cognitive communities, which relate to transacting at specific levels of analysis (firm, industry, etc.) while falling within general categories (e.g., planning, promise, competition).

General Implications for Transaction Cognition Theory

As noted above, multi-level theories can be generalized across levels because critical uniformities exist. The first task, then, in the specification of multi-level Transaction Cognition Theory is to identify and understand the critical uniformities that are proposed in fact to exist. Tables 3-1 and 3-2 (previously introduced) and Table 3-4 (below) provide a starting point for the ensuing discussion. In reading Table 3-4, the notion of representative sets described in the Introduction should be kept in mind[35]. For convenience, the examples utilized as "representative sets" of variables have been selected, where possible, from my own domain of study—entrepreneurship—as hopefully useful illustrations of the theoretical points developed (although the entrepreneurship examples appear to apply mainly at the individual and firm levels of analysis). Thus, in Tables 3-1 and 3-2 have been presented examples of possible transaction components, as they appear to relate in Transaction Cognition Theory at multiple levels of analysis. Correspondingly, Table 3-4 contains examples of possible transaction cognition constructs at multiple levels of analysis excerpted from the research literature that may be substituted into the Figure 2-1 model for the Planning, Promise, and Competition Cognitions in the labeled positions **A**, **B**, & **C**.

The form of the general propositions of a multi-level theory of transaction cognitions should be relatively standard. That is, at each level of analysis, the relationships specified should—consistent with Proposition 2-2[36] in Chapter 2—relate relevant planning, promise, and competition cognitions (as the independent variables) to the attainment of high performance economic results as it applies at that level of analysis (the dependent variable).

[35] In short, the idea of the "representative set" suggests that at this present time, there exists no exhaustive set of cognitions or transaction components at any given level of analysis.

[36] *Proposition 2-2: Planning, Promise, and Competition Cognitions acting together are positively related to the occurrence of a given transaction.*

TABLE 3-4

Examples of Transaction Cognitions At Multiple Levels of Analysis[37]

Level/Cognition	Planning	Promise	Competition
Transaction (Mitchell, 1999; Mitchell, 2000)	Planning Cognitions	Promise Cognitions	Competition Cognitions
Opportunity	Alertness Cognitions (Kirzner, 1997)	Product/Market Match Cognitions (Mitchell, 1995)	Technology Conversion Cognitions (Shane & Venkataraman, 2000)
Individual (Vesper, 1996)	• Planning/Fncg. Cognitions • Opns./Growth Cognitions	• Screening Cognitions • Start-up Cognitions	• Searching Cognitions • Set-up Cognitions
Firm (Mitchell et al., 2000)	Arrangements Cognitions	Willingness Cognitions	Opportunity-Ability Cognitions
Industry (Christensen, 1997: 54-55)	Flexibility Cognitions (Collins & Porras, 1995)	Value and Application Cognitions	Attribute Prioritization Cognitions
Economy (Thompson, 1989)	Fiscal Policy Cognitions	Monetary Policy Cognitions	Structural Competition Cognitions
Society (Mitchell, 1992)	Productivity Cognitions	Trust Cognitions	Value Cognitions

Accordingly, in Table 3-5 the following propositions are suggested, and—beginning at the individual level of analysis—will form the basis for the illustrations of the theory at each level of analysis that follow in Sections 3-2 through 3-6.

[37] At this writing the articulation of likely cognition constructs that correspond to Fatalism, Refusal, and Dependency Cognitions remains to be addressed in future research; but it does seem likely that a matrix similar to Table 3-4, which contains suggested examples of canceling cognitions at various levels of analysis should be quite useful, and ought to be developed as a necessary element for a more complete specification of Transaction Cognition Theory.

TABLE 3-5

Sample Transaction Cognition Theory Propositions

at Multiple Levels of Analysis

Level	Proposition
Transaction	*Proposition 3-1$_a$: Planning, promise, and competition cognitions acting together are positively related to the occurrence of a given transaction.*
Opportunity	*Proposition 3-1$_b$: Alertness, product-market match, and technology conversion cognitions acting together are positively related to the incidence of economic opportunity.*
Individual	*Proposition 3-1$_c$: Searching, screening, planning/financing, setup, startup, and operations/growth cognitions acting together are positively related to the occurrence of individual economic independence.*
Firm	*Proposition 3-1$_d$: Arrangements, willingness, and opportunity-ability cognitions acting together are positively related to the occurrence of firms (the venture creation decision).*
Industry	*Proposition 3-1$_e$: Flexibility, value and application, and attribute prioritization cognitions acting together are positively related to the occurrence of industry growth.*
Economy	*Proposition 3-1$_f$: Fiscal policy, monetary policy, and structural competition cognitions acting together are positively related to the occurrence of steady growth[38] in an economy.*
Society	*Proposition 3-1$_g$: Productivity, trust, and value cognitions acting together are positively related to prosperity and cultural well being in a society.*

Section 3-2: Implications for Individuals

Background

Transaction Cognition Theory proposes that three sets of cognitions working together are sufficient for an individual to create a successful transaction:

- Planning cognitions

[38] In late January 2001, in his testimony before the Senate Finance Committee of the US Congress, Federal Reserve Chairman Alan Greenspan cited steady growth as the desirable policy objective at the economy level of analysis.

- Promise cognitions
- Competition cognitions.

The combined experience (Vesper, 1996) of expert entrepreneurs suggests a master expert venturing script (Mitchell, 1994a; Mitchell & Chesteen, 1995) that contains at least the following six skill subscripts:

- Searching
- Screening
- Planning/financing
- Set-up
- Start-up
- Ongoing orchestration

This section is written: (1) to explain how the six entrepreneurship skill subscripts link to planning, promise, and competition cognitions as suggested by Transaction Cognition Theory, and (2) to relate the skill subscripts as independent variables to individual economic independence.

Transaction Cognition Entrepreneurship Theory

As previously discussed, transaction cognitions consist of specialized mental models or scripts (Arthur, 1994a; Neisser, 1967; Read, 1987) that guide individuals' economic responses to three principal sources of market imperfection: bounded rationality (BR), opportunism (O), and specificity (S) (Williamson, 1985). Williamson (1985: 31) argues that economic responses take the form of contracting processes in the transacting world and include: (1) planning, (2) promise, (3) competition, and (4) governance/hierarchy, depending (respectively in each instance) upon the presence/absence combination of the foregoing market attributes (BR, O, & S) (Williamson, 1985), as shown in the following table:

TABLE 3-6 – adapted from Williamson (1985: 31):
Some Attributes of the Contracting Process

Behavioral Assumption:			
Bounded Rationality	*Opportunism*	*Asset Specificity*	*Implied Contracting Process*
0	+	+	Planning
+	0	+	Promise
+	+	0	Competition
+	+	+	Governance

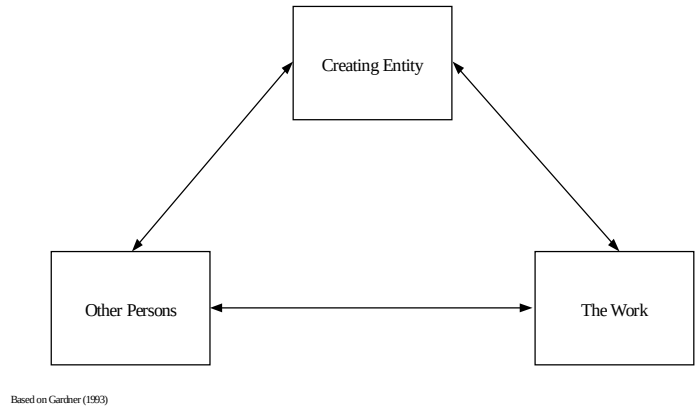
0 = absence, + = presence

This framework suggests three sets of attribute/process relationships: (1) between bounded rationality and planning, (2) between opportunism and promise, and (3) between specificity and competition. Interestingly, although each relationship is by nature bi-directional, Williamson utilizes only one direction in his analysis of hierarchies v. markets. That is, he suggests (for example) that the "absence" of bounded rationality in the "presence" of asset specificity and opportunism implies planning; but leaves underutilized the reverse idea that planning should also reduce bounded rationality in situations characterized by those same two conditions (Simon, 1979) (because planning affects transaction costs that arise from bounded rationality). The same conclusion follows for market imperfections created by opportunism and asset specificity. Opportunism should be affected by promise processes (e.g. trust creation (Barney & Hansen, 1994) among stakeholders (Agle, Mitchell, & Sonnenfeld, 1999; Mitchell et al., 1997)), and Specificity by competition processes (e.g. the adoption of a low-cost generic strategy (Porter, 1985)).

Thus, the cognitions that individuals possess about planning—defined as the mental models that assist in developing analytical structure to solve previously unstructured market problems, promise—defined as mental models that help in promoting trustworthiness in economic relationships with stakeholders (Agle et al., 1999; Mitchell et al., 1997), and competition—defined as mental models that can create sustainable competitive advantage, are expected to impact transaction costs, and therefore the success of transacting. Transaction costs are the costs of running the economic system, that to economic systems are what friction is to physical systems (Arrow, 1969: 48; Williamson, 1985: 19). Entrepreneurial opportunity (Kirzner, 1982) occurs when entrepreneurs utilize planning, promise and competition cognitions to enact transactions that would otherwise fail due to transaction costs. Entrepreneurship may in this respect be conceptualized as an essentially cognitive process (Mitchell et al., 2000).

By definition, a transaction occurs when a creating entity (e.g. an individual) produces a "work" (some product or service) and then enters into an exchange relationship with other persons (the marketplace) for the sale/acceptance of that work (Gardner, 1993) as illustrated in Figure 3-8.

FIGURE 3-8: The Elements of a Basic Transaction



Transaction cognitions are the mental models or scripts (Arthur, 1994a; Read, 1987) that are utilized in this process. Thus, where the objective of entrepreneurship is to discover and enact successful transactions (Kirzner, 1982), then the job of the entrepreneur is to use market imperfections to advantage. This reasoning produces the Transaction Cognition Theory definition of entrepreneurship, which in general is:

1. Causing a transaction to occur, which otherwise would have failed due to transaction costs,

and specifically in relation to the variables proposed in Transaction Cognition Theory is:

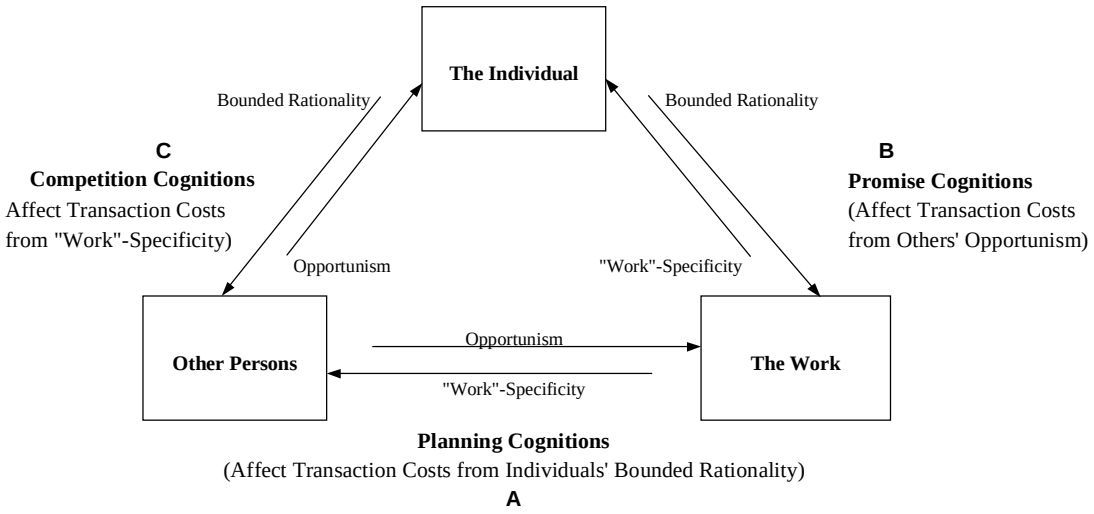
2. The use of transaction cognitions (mental models/scripts about planning, promise, and competition) to organize exchange relationships (among creating entities, the work, and other persons) that utilize the sources of market imperfections (bounded rationality, opportunism, and specificity) to create value (Arthur, 1994b; Csikszentmihalyi, 1988; Gardner, 1993; Mitchell, 1999; Williamson, 1985: 31),

as illustrated in Figure 3-9.

FIGURE 3-9

The Effect of the Specialized Mental Models:

Planning, Promise, and Competition Cognitions, on Transaction Costs



Based on Gardner (1993); Williamson (1985)

The Six Skill Subscripts

After over 25 years of studying entrepreneurs, Vesper, 1996 suggests six skill subscripts that experienced individual venturers utilize in venture creation. They include searching, screening, planning/financing, set-up, start-up, and ongoing orchestration. Each of these skill sets contains unique knowledge, and when combined, forms an entrepreneur's master script. As suggested earlier in this chapter, the model that is used to derive the independent variables in the Transaction Cognition Theory of high performance economic results is a fully scalable multi-level model. Figure 3-10 illustrates at the individual level of analysis the combination of the relationships proposed in Tables 3-1 and 3-4.

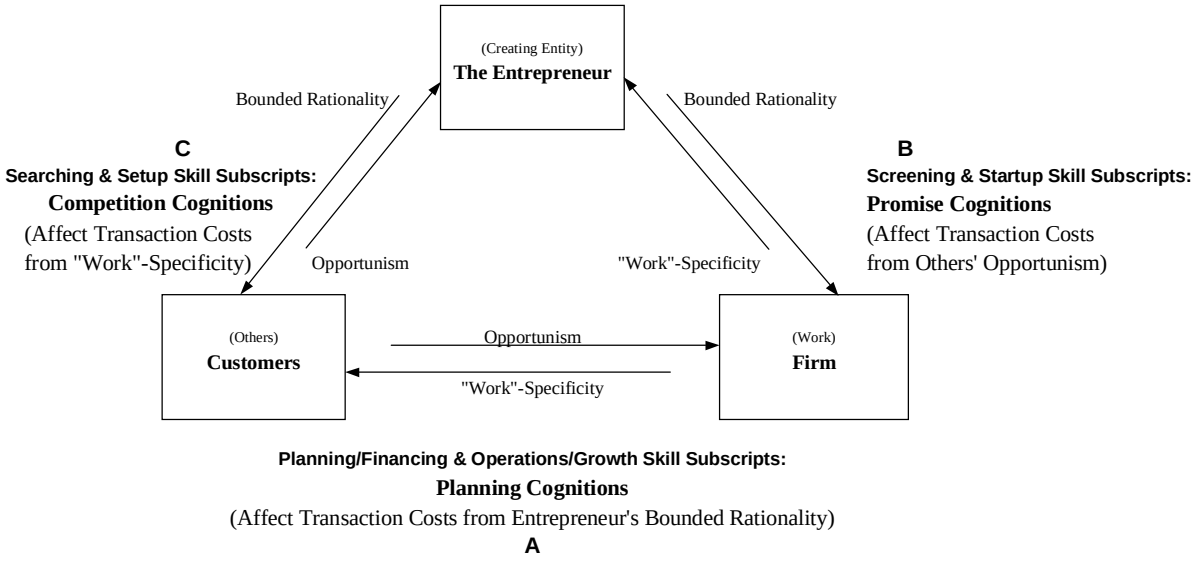
FIGURE 3-10

The Transaction Cognition Theory

Model at the Individual Level of Analysis:

(The Effect of the Planning, Promise, and Competition Cognitions'

Six Skill Subscripts on Transaction Costs)

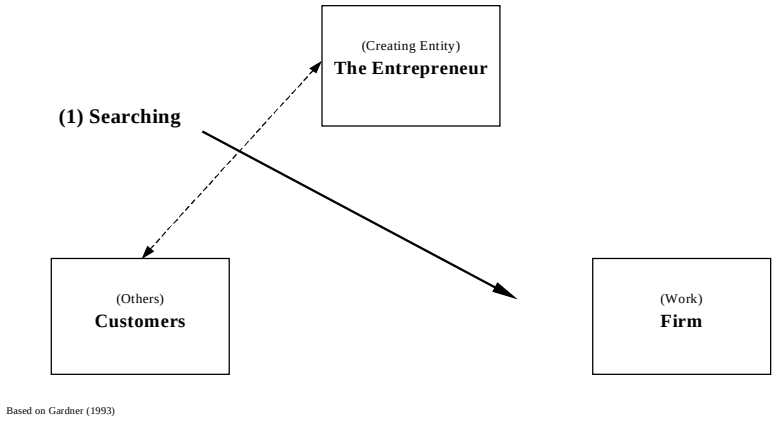


Based on Gardner (1993); Williamson (1985)

In the following section, each of the skill subscripts will be analyzed at the level of the individual, according to the transaction cognition model to produce a definition of the skill subscript in terms of Transaction Cognition Theory. A diagram explaining the link between Transaction Cognition Theory and each skill subscript will also be provided.

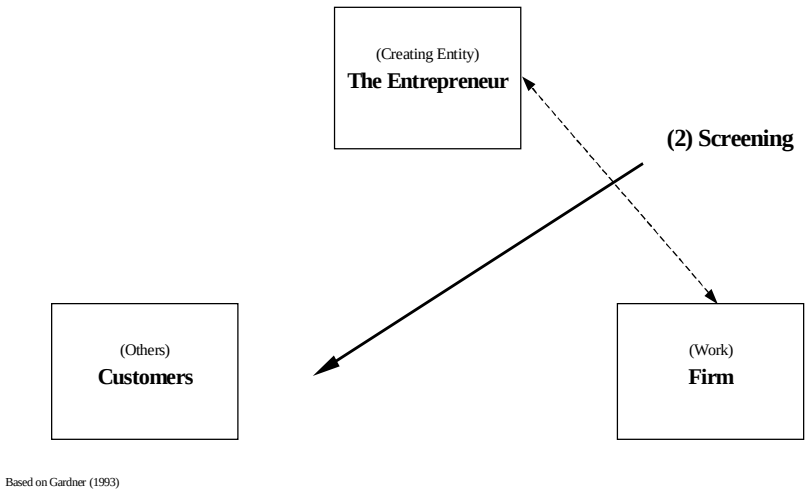
(1) Searching. In the search process an entrepreneur (the transaction creator) connects with customers (other persons in the marketplace), identifies products or services that these persons want and creates a firm (or other works-producing process) that can be produced competitively. As illustrated in the diagram below, the searching skill subscript primarily concerns finding "the work (or works-producing process)" that the market wants, and as shown in Figure 3-10 above, is a type of competition cognition:

FIGURE 3-10$_a$



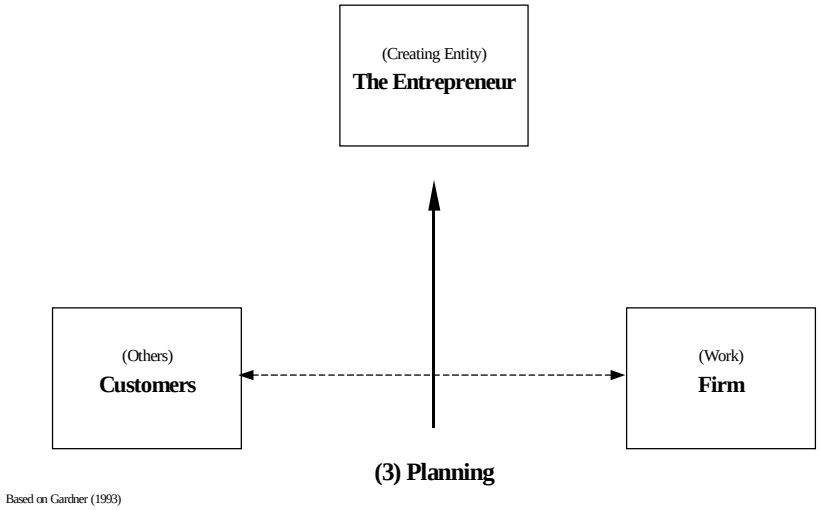
(2) Screening. In the screening process an entrepreneur (the transaction creator) assesses the proposed products or services/firm/works-producing process that the search has revealed, to estimate their/its promise to profitably satisfy the wants of potential customers (other persons in the marketplace). As illustrated in the diagram below, the screening skill subscript primarily involves understanding the wants of customers as "other persons," and as shown in Figure 3-10 above, is a type of promise cognition:

FIGURE 3-10$_b$



(3) Planning/Financing. In the planning/financing process an entrepreneur (the transaction creator) must gather, process, understand, and utilize the information necessary to organize the delivery of the work (level 1: products or services that other persons want; and level 2: the venture as a finance product) to other persons (the marketplace).

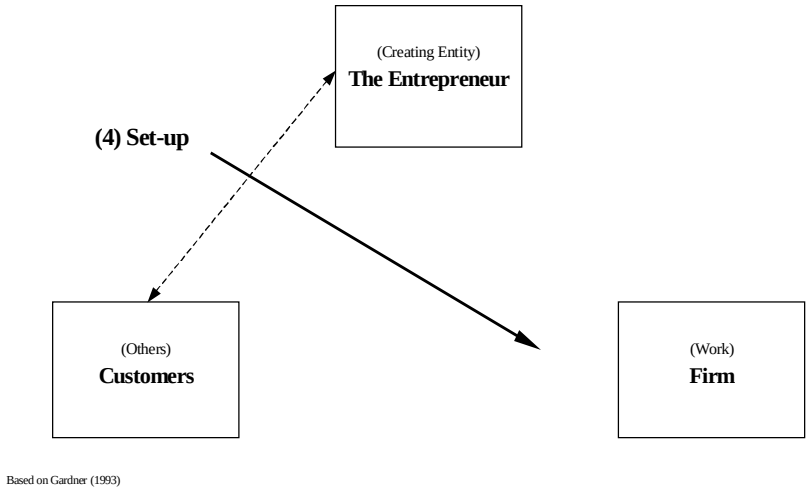
FIGURE 3-10$_c$



This includes the writing of the business plan and the use of this plan to finance the venture. As illustrated in the diagram, the planning/financing skill subscript primarily involves overcoming the limitations of "the individual entrepreneur" (transaction creator) through planning the connection of the work (level 1: products or services that other persons want; and level 2: the venture as a finance product) to customers (other persons in the marketplace), and as shown in Figure 3-10 above, is a type of planning cognition.

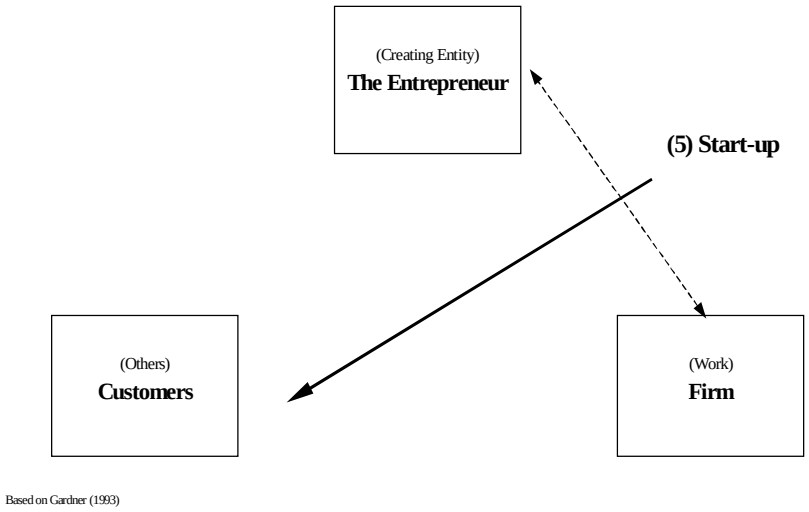
(4) Set-up. In the set-up process an entrepreneur (the transaction creator) connects with customers (other persons in the marketplace), and creates the venture that will produce competitively the products or services that these customers want (works). As illustrated in the diagram below, the set-up skill subscript primarily concerns the production of "the work" that the market wants, and as shown in Figure 3-10 above, is a type of competition cognition:

FIGURE 3-10$_d$



(5) Start-up. In the start-up process an entrepreneur (the transaction creator) focuses on the wants of customers (other persons in the marketplace), and begins the process of production and sale of the products or services that the venture produces (work) to satisfy the wants of customers (other persons in the marketplace). As illustrated in the diagram below, the start-up skill subscript primarily involves understanding customers as "other persons" in the marketplace, and as shown in Figure 3-10 above, is a type of promise cognition:

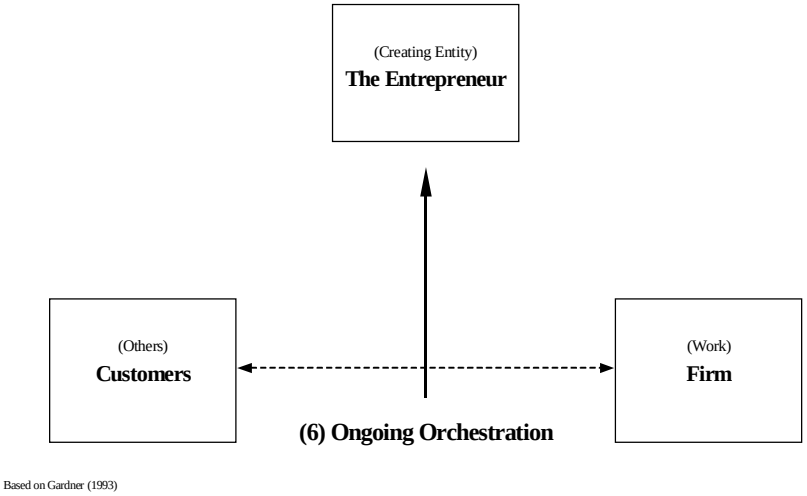
FIGURE $3\text{-}10_e$



Based on Gardner (1993)

(6) Ongoing Orchestration. In the ongoing orchestration and growth process an entrepreneur (the transaction creator) must gather, process, understand, and utilize the information necessary to continue the delivery of the work (level 1: products or services that one set of customers want—as other persons in the marketplace; and level 2: the venture as a finance product that another set of customers want) to other persons (the marketplace). This includes the implementation of the operations plan and the use of this plan to produce the results that the venture was created to accomplish. As illustrated in the diagram below, the ongoing orchestration skill subscript primarily involves a continuous process of overcoming the limitations of "the individual entrepreneur" (transaction creator) through planning for, assessing, and maintaining the connection of the work (level 1: products or services that other persons want; and level 2: the venture as a finance product) to the "other persons" (marketplace), and as shown in Figure 3-10 above, is a type of planning cognition:

FIGURE 3-10$_f$

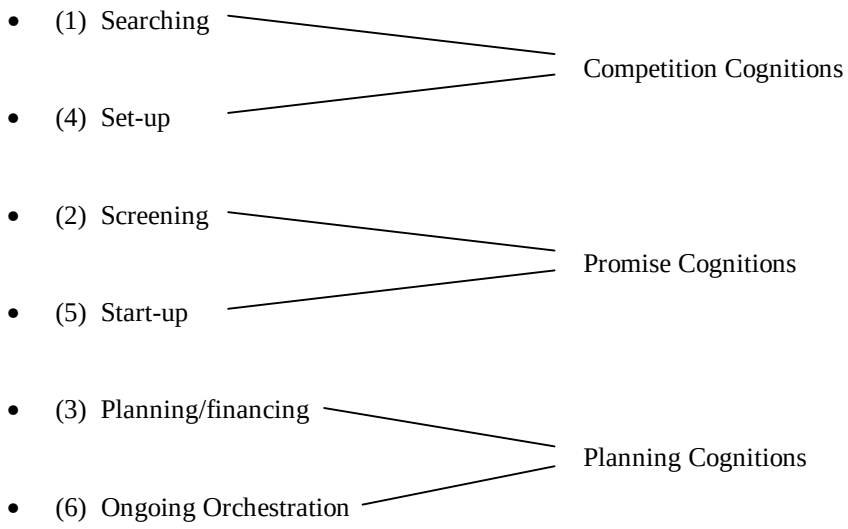


It should now be evident from the foregoing discussion—at the individual level of analysis—how the skills of the venturing subscripts link to the set of three transaction cognitions:

FIGURE 3-11

Linking Venture Subscripts to

Transaction Cognitions



The Skill Subscripts and Individual Economic Independence

People seek economic independence. The need for economic independence is thought to be part of a fundamental rung on the ladder of human needs (Maslow, 1954). Yet for most people, the accepted way to accomplish economic independence—getting and keeping a stable job—is becoming less and less reliable as Western economies yield to the pressures of globalization; and having a stable

job has never been counted on by all but a few individuals who live in third and fourth tier economies (Prahalad & Hart, 1999). Some commentators claim that for many people, the possibility of attaining economic independence even in first tier economies no longer exists (Mandel, 1996).

One response to this growing job uncertainty is the increasing emphasis on individual entrepreneurship. The encouragement of entrepreneurial behavior has become a political mantra in the USA (Kimbro, 1995) and throughout the world (Annan, 1999). In response to such encouragement, the research community has expended extensive effort to better understand entrepreneurship (please see for example reviews by (Duchesneau & Gartner, 1990) and (Wortman, 1987)), under the implicit assumption that should entrepreneurship be better understood, more jobs could be created (Birch, 1981; Birley, 1986; Kirchhoff & Greene, 1995; Kirchhoff & Phillips, 1988), and therefore greater economic independence would be the result.

Transaction Cognition Theory suggests a relationship between the attainment of economic independence and the possession by individuals of a set of entrepreneurial cognitions: a set of six skill subscripts that more broadly can be described as competition, promise, and planning cognitions (Mitchell, 2000). Transaction Cognition Theory provides the foundation for one of the broadest definitions of entrepreneurship, a definition that provides the hope that almost every individual can more fully engage in the processes of gaining their own economic independence: Being able to cause a transaction to occur when it otherwise would have failed due to transaction costs.

Unfortunately, many people fear that personally engaging in entrepreneurial behavior might actually turn out to be incompatible with their own economic independence because: (a) they lack or are unaware of entrepreneurial cognitions: the six individual skill subscripts, and/or (b) they are impeded by the possession of one or more of the following "canceling" cognitions:

3. *Dependency Cognitions:* Because the formation of the multiple economic relationships entailed in entrepreneurship is often difficult (Stevenson, Roberts, & Grousbeck, 1994) many people—while unable to produce enough economic value themselves—prefer to rely for their economic security upon receiving a portion the value created by others. Individuals thus focus on finding, keeping, or just tolerating jobs in which they are able to add little value, or upon gaining access to a transfer payments stream (private or public), instead of on the identification, prioritization, and building of sound economic relationships with venture stakeholders, which can lead—through processes of new transaction completion—to economic independence (Carroll & Mosakowski, 1987).
4. *Refusal Cognitions:* Because most people think that venturing is too big a risk, relatively few individuals attempt independent transaction initiation and completion (Knight, 1921; Kolvereid, 1996).
5. *Fatalism Cognitions:* Because many people also believe (Hisrich, 1990; McMullan & Long, 1990) that entrepreneurial ability is based upon having certain personal characteristics e.g. (McClelland, 1968) transacting success or failure is fatalistically attributed to the possession of or lack of personal traits—which one can do little about—rather than to the lack of properly constructed transactions, which—being cognitively based (Mitchell, 1994a; Mitchell et al., 2000) one can acquire the capability to enact (Mitchell & Chesteen, 1995).

In short, based upon the foregoing three perception-based canceling cognitions, most people do not estimate that entrepreneurial behavior—if undertaken—will be compatible with their personal economic independence. So despite calls for more entrepreneurship, the drive toward more

individual entrepreneurial transacting behavior is forestalled due to individual skepticism about the actual outcome in a given situation.

Thus the questions arise: What is economic independence? What are the six skill subscripts and how are they related to the attainment of individual economic independence? What changes are necessary to encourage maximum entrepreneurial behavior? This subsection of the monograph addresses these questions by utilizing self-efficacy theory to demonstrate how specific cognition sets affect entrepreneurial behavior and economic independence.

Economic Independence

Economic independence consists of "having provisions in store for an uncertain future" (Durant, 1935: 2). The definition has two key terms—*provisions in store*, and *future uncertainty*. In a dynamic world, these conditions are variable: provisions are consumed and must be replenished, and uncertainty persists over the long term. Accordingly, a deeper analysis is required so that we can understand how—in the face of these two intractable variables—a condition such as economic independence is possible at all. The question that then must be answered is: Given the consumption of provisions, and given uncertainty, what behaviors lead to the possession—at any given time—of sufficient provisions in store for an uncertain future?

The simplest answer seems to be: access to a continuing source of replacement for provisions that have been used or must be newly required due to changes in the situation. And it seems sensible at this point to suggest that the acquisition of requisite provisions will most likely be achieved through the process of successful transacting that results in an uninterrupted (or rarely interrupted) flow of transactions. Under this logic, the failure of transactions is destructive to economic independence. Thus, economic independence as we have defined it might be thought to depend upon the capability of individuals to persistently cause transactions to occur, which otherwise would have failed—the Transaction Cognition definition of entrepreneurship. Following this logic: economic independence and entrepreneurship are therefore related, and economic independence is more likely to be sustained where entrepreneurship is persistent.

Thus, a deeper understanding of entrepreneurship, and especially of persistent entrepreneurship seems to be one of the keys to better understanding economic independence. It therefore also seems necessary to seek to better understand the independent variables that Transaction Cognition Theory suggests will stimulate persistent entrepreneurship, and thereby individual economic independence. The following subsections address these objectives.

Persistent Entrepreneurship

Traditionally, entrepreneurship has been viewed as a primary means that individuals use to attain economic independence. Since the noun "entrepreneur," first entered language in the 15th century (originating with the French verb "entreprendre," in the 12th century (Hoselitz, 1951) connoting "to do something") the notion of "undertaking" independent economic action to attain greater prosperity—and thereby economic independence (Cantillon, 1964 (1755)) has been well accepted by society at large. In the following paragraphs: (1) the history of the term entrepreneurship and a linkage of past research to the present conceptualization under Transaction Cognition Theory, (2) the notion of persistence in entrepreneurship, and (3) the linkage of persistent individual entrepreneurship to self-efficacy theory are discussed.

History of the definition. In the past, there has been much discussion about a definition of the term "entrepreneurship," and even about the need for such discussion (Carland, Hoy, & Carland, 1988; Gartner, 1989). Prior definitions have focused upon the economic role of entrepreneurs (Baudeau, 1910; Cantillon, 1964 (1755); Kirzner, 1982; Leibenstein, 1968; Menger, 1981; Schumpeter, 1934), the characteristics of entrepreneurs (Collins & Moore, 1964; Coulton & Udell, 1976; McClelland, 1965; Rotter, 1966), or the performance of entrepreneurial ventures (Chandler & Jansen, 1992; Hall & Hofer, 1993; Herron & Robinson, 1993; McDougall, Robinson, & DeNisi, 1992; Sandberg & Hofer, 1987; Stuart & Abetti, 1990).

In the mid-1980's a four-part diamond model of entrepreneurship as: (1) a process that interacts with: (2) the individual, (3) the organization created, and (4) the environment, was proposed as an integrating framework (Gartner, 1985). Most recently, the field has been evaluating definitions that define entrepreneurship as a creative behavior that is based upon a particular way of thinking. One of the more commonly used of these definitions describes entrepreneurship as " . . . the pursuit of opportunity without regard to resources currently controlled" (Stevenson et al., 1994): the actions taken in pursuit of opportunity being the creative behavior, and the cognitions that guide those actions (the thought patterns that permit the level of resources currently controlled to be of minimal importance) being the way of thinking.

Transaction Cognition Theory suggests a further refinement of the Gartner diamond model proposing that creative behavior is the interaction among: (1) the individual, (2) the work, and (3) the others who both judge the work and shape the individual creator (Csikszentmihalyi, 1988; Gardner, 1993). Interestingly, where entrepreneurship is considered to be a creative behavior at the individual level of analysis, the creation of a venture/firm organization is considered to be *the work*, and where the venture environment is broadly construed to be comprised of *others* in the social environment, three of the four elements of the Gartner model may also be represented by this model. And if—as suggested by Transaction Cognition Theory—we then consider the "process" portion of the original Gartner model (which includes locate opportunity, accumulate resources, market products/services, produce products/services, build an organization, respond to government and society (Gartner, 1985: 702)) as behaviors that arise from the use of the six Vesper (1996) transaction cognition skill subscripts noted earlier in this section, we can generate a refined definition of individual entrepreneurship, and link Transaction Cognition Theory at the individual level of analysis to the prior individual entrepreneurship research literature.

With this model conceptualized we thereby establish the foundation for an examination of the cognitions—or ways of thinking—that shape entrepreneurship as a creative behavior that produces the high performance economic result: economic independence. Fundamentally, the Csikszentmihalyi/Gardner model of creative behavior that is the basis for the Transaction Cognition Theory model, is a social-cognitive model. That is, information derived from the individual, the work task, and others in the social environment contribute to perceptions of capability, which in turn, are thought—through self-efficacy— to affect behavior . . . especially goal levels set, and persistence (Gist & Mitchell, 1992: 184, 189). This perceptions-persistence linkage appears to be at the core of an analysis of economic independence because peoples' belief in their capacity to orchestrate the behaviors that lead to persistent transacting and thereby to economic independence seems to be associated with their perceptions (1992: 189). Consequently, the role of persistence in individual behavior generally, and in entrepreneurial behavior specifically, and the role of perceptions in understanding the operation of Transaction Cognition Theory at the individual level of analysis should be further articulated.

Persistent Entrepreneurship. Of particular interest in the analysis—because of its consistent impact on economic independence—is behavior that can be described as "persistent entrepreneurship." Persistent entrepreneurship, under the Transaction Cognition Theory definition, is the consistent creation of transactions which otherwise would have failed due to transaction costs. Persistent entrepreneurship, therefore, is the key to individuals' replenishment and revitalization of provisions in store, and is thereby the key to their economic independence.

Persistent entrepreneurship is a broader notion than the related idea known as "serial entrepreneurship,"[39] because, in addition to including the serial entrepreneurship behaviors of second start-ups, sales and subsequent buy-backs (secondary MBOs), and sales that generate funds for a buy-in (MBIs) (Wright et al., 1995) persistent entrepreneurship as conceived herein also includes the further pursuit of opportunity within a firm—so called "intrapreneurship" (Pinchot III, 1985), and/or the continued pursuit of opportunity despite failure in a previous attempt.

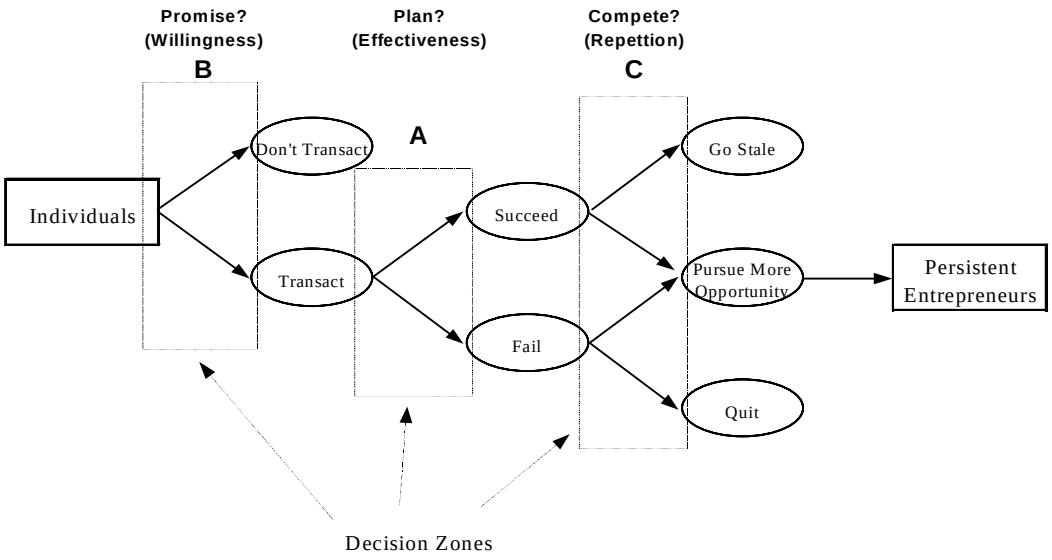
As illustrated in Figure 3-12, persistent entrepreneurship occurs only when, having ventured once into transacting, an individual ventures again and again—whether or not the first venture succeeds. It is widely accepted that some societies or geographical regions possess a greater proportion of persistent entrepreneurs, and as a result experience more positive economic consequences (McMullan & Long, 1990; Shane, 1996). The study of persistent entrepreneurial activity in a society is most useful, then, because the level of persistent entrepreneurial activity provides a credible test of the influence of various perceptions on economic independence, and the effectiveness of encouragement measures taken.

At each stage of decision-making in the process of persistent entrepreneurship, perceptions figure prominently. Figure 3-12 illustrates further how promise-based decisions in Zone A are affected by perceptions which enable or disable willingness to transact; how planning-based decisions in zone B are affected by perceptions which either enable or disable effectiveness, and how competition-based decisions in Zone C are affected by perceptions which encourage or discourage the repetition of entrepreneurial behavior (such as the pursuit of more opportunity). Together, the perceptions that influence these three decisions combine to have a profound effect on the level of persistent individual entrepreneurship.

[39] The notion of persistent entrepreneurship is valuable for different reasons than is the notion of serial entrepreneurship, suggesting that the meanings of the two terms should be distinguished. The notion of serial entrepreneurs (second time, habitual or multiple entrepreneurs) helps us to better understand the nature of entrepreneurship and the relationship between entrepreneurship experience and venture performance (Starr & Bygrave, 1991; Wright, Robbie, & Ennew, 1995), although it does not comprehend the full range of activities encompassed by the term persistent entrepreneurship. The notion of persistent entrepreneurship is valuable because it explains the overall incidence of entrepreneurial activity as it relates to economic independence—while not relating specifically to levels of performance in venturing itself, as does the idea of serial entrepreneurship.

FIGURE 3-12

Persistent Transacting Decision Tree[40]



The nature of these perceptions—whether they enable or disable the steps of persistent entrepreneurship—may be shown, in turn, to be affected by cognitions. Building upon the ideas presented in the preceding chapter, and generalizing upon the types of cognitive information derived from interactions in the Transaction Cognition Theory model (Figure 3-10) (among the individual, the work task, and others in the social environment) produces three categories of perceptions that affect creative behavior: Category A: planning cognition perceptions that relate to the assessment of resource constraints and the capability to deliver on economic promises, Category B: promise cognition perceptions that relate attributions of past experience to the desire to transact in future, and Category C: competition cognition perceptions that relate the analysis of the task requirements to the decision to engage or to continue economic activity. Transaction Cognition Theory suggests that, depending upon the substance of these cognitions (the relative presence of planning, promise, and competition; and the relative absence of fatalism, refusal, and dependency cognitions), the steps in persistent entrepreneurship will either be enabled or disabled, with corresponding effects on economic independence (Figures 2-10 and 3-12).

Persistent individual entrepreneurship and self-efficacy theory. The construct of self-efficacy, derived from social cognitive theory (Bandura, 1986), is thought to play a primary role in relating individual perceptions about self, work and others, to consequences such as goal level and persistence, and ultimately to performance (Gist & Mitchell, 1992). By borrowing a diagram from Gist and Mitchell (1992: 189) the self-efficacy—high performance economic result relationship may be illustrated; and we can see a sample conceptualization of how persistent entrepreneurship and economic independence can reasonably be expected to flow from interventions that affect

[40] The reader will no doubt notice the similarity of the decision tree in this figure to that illustrated in Figure 2-10. To achieve conceptual consistency, Figure 2-10 may be considered to be the general model, and the decision tree in this figure to be a specific case of that model. Further, being a version of an iterative general model (Figure 2-10), the decision tree shown here should be viewed as a loop, beginning with Step 2 (Promise?) of the general model (Figure 2-10) and proceeding onward from there.

individuals' cognitions/knowledge, and therefore their perceptions. The model shown in Figure 3-13 portrays a self-efficacy theory explanation of results.

In the model shown, knowledge acquisition (e.g. knowledge acquired through enactive mastery, vicarious experience, etc.) would be accomplished through intervention strategies that are specific to each knowledge set as described in the diagram. These interventions would, in turn, be expected to influence perceptions (assessment of personal and situational resource constraints, attributional analyses of experiences, and analysis of task requirements), which would then affect self-efficacy (estimation of venture orchestration capacity), the consequences of self-efficacy (goal level, persistence of entrepreneurial behavior), and ultimately performance (economic independence).

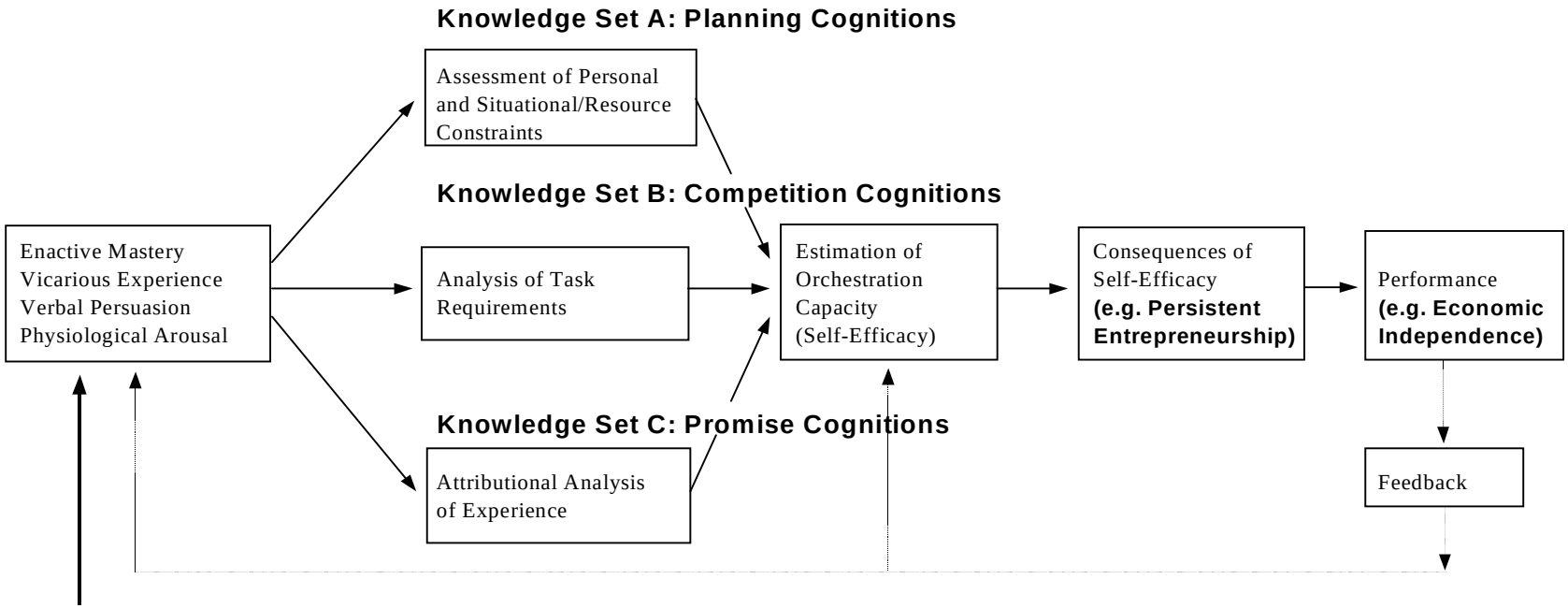
The mechanics of how these alternative cognitions influence persistent entrepreneurship and performance (economic independence) have been well documented in the self-efficacy portion of the cognition literature (Gist & Mitchell, 1992). In essence, knowledge acquisition (e.g. enactive mastery, vicarious experience, etc.) is thought to affect perception (assessment, attribution, analysis), which affects self-efficacy (estimation of orchestration capacity), the consequences of self-efficacy (goal level, persistence), and ultimately performance (1992: 189). When the cognitions described by Transaction Cognition Theory are applied within this model (of self-efficacy, persistence, and performance) the specific types of knowledge acquisition suggested to be necessary by Transaction Cognition Theory can be mapped on to the self-efficacy process diagram, thereby suggesting how persistent entrepreneurship can be related to planning, promise and competition cognitions. A discussion of the basis for these cognitions, and the argument for their linkage to economic independence follows.

Transaction Cognitions and Economic Independence

The two-part definition of economic independence presented earlier is particularly useful in a discussion that centers on individual economic behavior, because it helps us to better understand the cognitions that lead either toward, or away from economic independence. Although at present our understanding of the systematic relationships between planning, promise, and competition cognitions, and fatalism, refusal, and dependency as canceling cognitions is only in its infancy, a common-sense analysis of the human approach and perceptions related to the attainment of individual economic independence still appears to be possible, especially as it related to the reasons why the canceling or disabling cognitions arise.

FIGURE 3-13

A Self-Efficacy Model of Persistent Entrepreneurship



Intervention Strategies:

Knowledge Set A: (Planning Cognitions)	**Provide training that directly improves individual capability to utilize/minimize bounded rationality related to resource constraints (plan and organize), through mastery, modeling, apprenticeship, and mentorship activities.**
Knowledge Set B: (Competition Cognitions)	**Provide information that enhances individual capability to identify and create works of value to "others" (to search and "setup") through modeling experiences, work simulations, and on-the-job training.**
Knowledge Set C: (Promise Cognitions)	**Provide information to improve individual capability to translate transacting experiences into complted exchange agreements (to screen and setup), through the use of modeling, feedback, and persuasion to improve economic relationship skills.**

(Based on Gist & Mitchell, 1992: 189, 203)

As humans we all experience three implicit perceptions of economic independence as variations occur in either the provisions we have in store, or in our views about the certainty of the future. First, any act that may be seen as placing provisions at risk, or as adding to future uncertainty is likely to be viewed as economically insecure. Second, people tend to think that they are more secure economically when they have higher certainty about the adequacy of their provisions to meet that future. Third, most individuals are only moderately certain about their future, and possess only a partial store of provisions. As a result, most of us think of ourselves as at least partially insecure, and are therefore sensitive to the prospect of additional reductions in either certainty or in the provisions that we have in store.

It therefore appears likely that due to a lack of awareness of planning, promise, and competition cognitions, and due to our sensitivity to reductions in certainty and/or our store of provisions, it might be considered to be the conservative or prudent stance to expect individuals to be more influenced by fatalism, refusal, and dependency cognitions. Thus, for example, there are well-documented instances reported as "prospect theory" (Kahneman & Tversky, 1979) where (in psychological prospect) losses loom larger than gains (1979: 288), and individuals' actual utility has been found to be less than expected utility—a difference likely due to a lack of understanding of or the capability to manage transaction costs[41]. For example, a person's choice between a job and self-employment might be conceptualized as a transaction cost-induced substitution at the margin (a decision to transact with a "boss" v. 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). Making choices such as between venturing or job-holding requires the use of specialized cognitions that individuals possess about creating social arrangements based upon promise (e.g., scripts that help in identifying and prioritizing stakeholders thereby building trust in economic relationships) to help individuals to predict which choice is likely to be more reliable. Promise-based cognitions assist individuals in assessing the likelihood that those with a "stake" (Clarkson, 1995; Mitchell et al., 1997) in the economic well being of that individual will, in fact, be reliable in exchange relationships. Examples of this same analysis as applied to planning or competition cognitions might also come to the mind of the reader as further implications are considered.

Transaction Cognition Theory suggests that where individuals possess the requisite cognitions, transaction costs are more likely to be utilized to enable, v. to disable transacting. Since it has been well documented (Vesper, 1996) that successful venturing follows a fairly standard process: searching, screening, planning/financing, setup, startup, and ongoing operations and since earlier in this chapter the content of these six skill subscripts was presented, and justified theoretically, it therefore seems likely that:

[41] (Note: also Note 6). Prospect Theory (Kahneman & Tversky, 1979) provides one of the most clear illustrations of the transaction costs that arise from bounded rationality. Essentially Kahneman and Tversky found that the actual value of economic choices made by individuals (actual utility) was less than the possible value (expected utility) because individuals ignored or overweighted highly unlikely events, or neglected or exaggerated highly likely events due to: *reflection effects* (emphasis in original)—risk aversion in the positive domain and risk seeking in the negative (1979: 268), and *isolation effects*—disregarding the commonly shared attributes of decisions to focus on the distinguishing ones (1979: 271). According to Prospect Theory, these effects arise due to cognitive errors that occur in individuals' *coding, combination, and/or cancellation* (1979: 274) of relevant information, which taken together limit/bound rationality.

Proposition 3-1$_c$: Searching, screening, planning/financing, setup, startup, and operations/growth cognitions acting together are positively related to the occurrence of individual economic independence.

Section 3-3: Implications for Firms

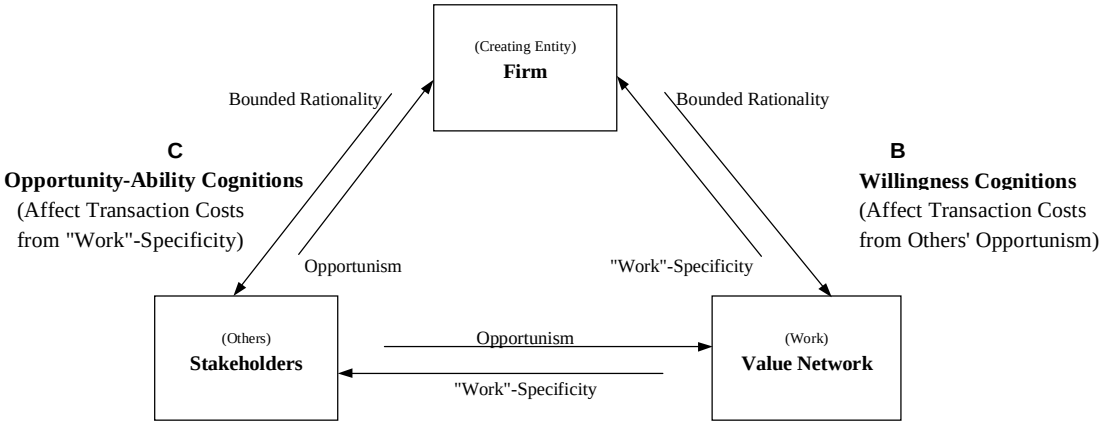
Introduction

At the firm level of analysis, the creation of the firm is one of the points where the influence of Planning, Promise, and Competition Cognitions may be observed. One of the key cognitive exercises within the firm creation process is the venture creation decision itself (Busenitz & Lau, 1996). In this section, we: (1) explore how arrangements, willingness, and opportunity-ability cognitions (Mitchell et al., 2000) qualify as firm level examples of planning, promise, and competition cognitions as suggested by Transaction Cognition Theory[42], and (2) relate arrangements, willingness, and opportunity-ability cognitions as independent variables to this important high performance economic result: the venture creation decision.

Arrangements, Willingness, and Opportunity-Ability Cognitions

As suggested earlier in this chapter, the model that is used to derive the independent variables in the Transaction Cognition Theory of high performance economic results is a fully scalable multi-level model. Figure 3-14 illustrates at the firm level of analysis the combination of the relationships proposed as examples in Tables 3-1 and 3-4.

FIGURE 3-14
The Transaction Cognition Theory Model
At the Firm Level of Analysis



Based on Gardner (1993); Williamson (1985)

[42] To enhance the clarity of explanation, and to maintain consistency of description at the firm level of analysis, some of the discussion in this section is paraphrased from the article (Mitchell et al., 2000) as published by the University of Victoria entrepreneurship research team comprised of Professors Brock Smith, Eric Morse, and myself, along with Professor Kristie Seawright of Brigham Young University.

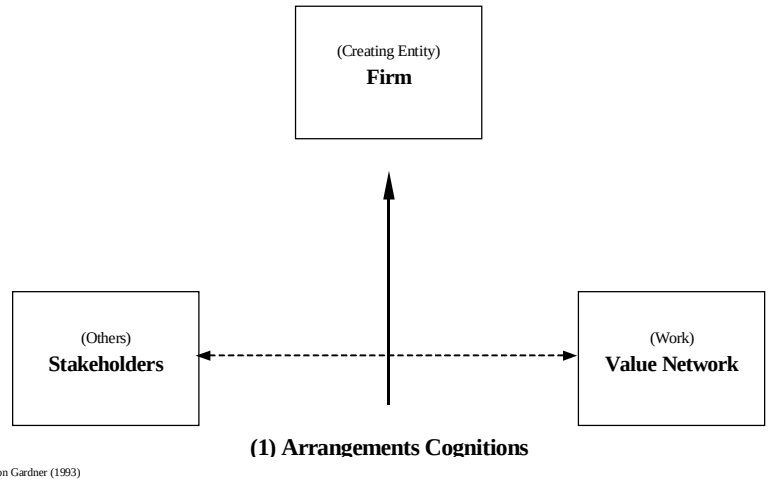
A key study in the expert information processing literature, (Leddo & Abelson, 1986), furnishes the basis for the identification of independent variables that might be expected to influence the venture creation decision within the comprehensive reality illustrated in Figure 3-14 and as required by social cognition theory (Chapter 1). The 1986 study reports the results of a set of experiments where the responses of subjects on several script-based tasks (e.g. planning) were observed. The observations of Leddo and Abelson (1986) are consistent with social cognition theory, and suggest the manner in which a configuration of forces such as that represented in Figure 3-14 affects the cognitions utilized by individuals in decision making situations such as the venture creation decision. Cognitive scripts were found to consist of information about *both* the situation itself and the sequentially ordered knowledge required for performance within that situation.

In the early stages of the general script sequence described in the article, the scripts of individuals were found to emphasize the adequacy of script "entry" *arrangements* (e.g., does an artisan possess or have access to the tools of the trade and the required materials?). Here the constraints of persons in given situations were shown to be part of the scripts as suggested by social cognition theory. In later stages of a script sequence, individuals were found—while retaining their concern for arrangements—to emphasize "doing" or enacting script requirements, which implicates motivation/*willingness*, and the *ability* of individuals to carry out the main goal of the script (e.g., given tools and materials, will the artisan choose to, and be able to do the work?) (Leddo & Abelson, 1986: 121). Interestingly, evidence of these three general cognitive processes (arrangements, willingness, and ability) has also been found in the testing of intention-based, planned behavior models of the entrepreneurial event, but under different labels (Krueger & Carsrud, 1993; Shapero, 1975; Shapero, 1982). These constructs include: (1) arrangements cognitions, relating to the *feasibility* of the venture, (2) willingness cognitions, relating to the *propensity to act*, and (3) ability cognitions relating to venture *desirability* (Krueger, 1993: 5).

Similar to the analysis in Section 3-2, in the following subsections, each of the foregoing suggested scripts will be examined according to the transaction cognition model at the firm level of analysis, to produce a definition of a firm-level example script described in terms of Transaction Cognition Theory. Once again a diagram explaining the link between Transaction Cognition Theory and each script will also be provided.

(1) Arrangements. In the arrangements process the firm (the transaction creator) must gather, process, comprehend, and utilize the information necessary to organize the delivery of the value generated by the venture (the work) to stakeholders (other persons in the marketplace). This includes the enactment of a business plan, and requires the marshalling of the contacts, relationships, resources, and assets necessary to form a new venture.

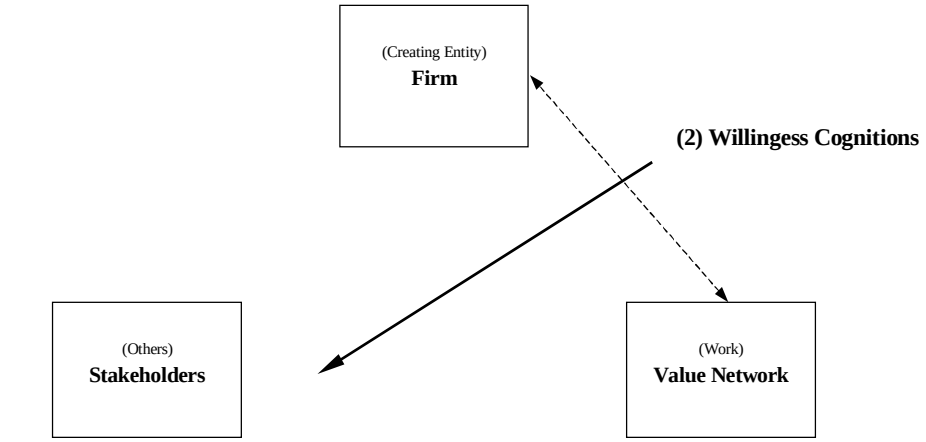
FIGURE 3-14$_a$



As illustrated in the diagram, arrangements scripts primarily involve overcoming the limitations inherent within the management team of a firm (transaction creators) through planning the connection of the value network created by the existence of the firm (the work) to stakeholders (other persons in the marketplace), and as shown in Figure 3-14 above, are a type of planning cognition:

(2) Willingness. Willingness cognitions result in the commitment to venturing, and receptivity to the idea of starting a venture, and are thought to exist within the group that may be identified as salient stakeholders (Mitchell et al., 1997). Willingness scripts are the knowledge structures that underlie (inform) this commitment. When willingness scripts are utilized the firm (the transaction creator) assesses the proposed value network (the value chain (Porter, 1985) that produces products or services "work" that other persons might want), to estimate their promise to profitably satisfy the wants of stakeholders (other persons in the marketplace). As illustrated in the diagram below, willingness scripts primarily involve understanding the wants of "other persons," and as shown in Figure 3-14 above, is a type of promise cognition:

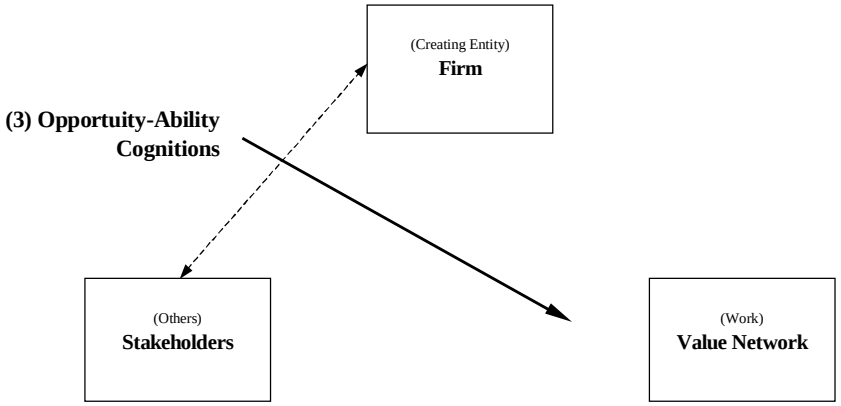
FIGURE 3-14$_b$



Based on Gardner (1993)

(3) Opportunity-Ability. Ability cognitions consist of the knowledge structures or scripts that individuals have about the capabilities, skills, knowledge, norms and attitudes required to create a venture (Bull & Willard, 1993; Herron, 1990). In using ability scripts the firm management team (the transaction creator) connects with stakeholders (other persons in the marketplace), and identifies works (an assembly or network of products or services producers) that these persons want, that the firm can produce competitively. As illustrated in the diagram below, ability scripts primarily concern finding and generating a value network that can enact "the work" that stakeholders in the market wants and as shown in Figure 3-14 above, is a type of competition cognition:

FIGURE 3-14$_c$



Based on Gardner (1993)

Transaction Cognitions and The Venture Creation Decision

Busenitz and Lau (1996) suggest that the venture creation decision is influenced by cognitions. By adopting Leddo and Abelson's (1986) cognition constructs (arrangements, willingness, and ability scripts) a similar model has been operationalized to link transaction cognitions and the venture creation decision (Mitchell et al., 2000). In brief, this model proposes that arrangements, willingness, and ability scripts influence the venture creation decision.

The Venture Creation Decision

The venture creation decision is an outcome variable that indicates whether or not an individual has made the decision to start a venture. It is particularly useful as a construct in cognition research because it represents a prior choice at a point in time between intention to venture and venture creation, where scripts, having been created over time (Schumacher & Czerwinski, 1992: 72), are enacted. The venture creation decision is an appropriate focal construct because it occurs regardless of the location, type of industry, or the nature of the venture.

The venture creation decision is also appropriate from a substantive perspective. It is important to the prosperity of most countries, and governments often report the number of ventures created as an indication of economic well being. Emerging firms, for example, have recently been reported to create 450,000 jobs in the U.S., or 35% of new jobs for the year, and are responsible for an important proportion of all new employment growth in Canada (Arzeni, 1998).

The influence of Arrangements, Willingness and Ability scripts. Leddo and Abelson (1986) suggest that script enactment, such as making the venture creation decision, requires <u>both</u> "entry" (arrangements) and "doing" (willingness and ability) scripts in sequence. Leddo and Abelson write:

> These privileged functions we label Entry and Doing; the former occurs early in the script, and the latter near the end. Entry presupposes the success of script entry *arrangements* . . . Doing presupposes the actor's *willingness* and the *ability to carry out the action* serving the main goal of the script. (1986: 121) (emphasis added)

Thus, arrangements scripts are thought to have primacy in that they are of concern earlier in the performance sequence. Social cognition theory, however, suggests that interactions between ability, willingness and arrangements scripts may be critical to expert performance in a total configuration of forces (both entry and doing scripts). Arrangements scripts are therefore necessary for enactment of the venture creation decision but they are not sufficient. Without willingness scripts, there may not be sufficient motivation to utilize arrangement scripts. Without ability scripts, there may not be sufficient skill to utilize arrangement scripts. Willingness scripts without ability scripts may result in venture creation decisions, but these ventures are not likely to last very long (a "rockets to oblivion" phenomenon). Thus arrangements, willingness, and ability scripts are thought be necessary, but individually not sufficient, for expert outcomes. The foregoing arguments provide reason to suggest:

> *Proposition 3-1$_a$: Arrangements, willingness, and opportunity-ability cognitions acting together are positively related to the occurrence of firms (the venture creation decision).*[43]

[43] A suggestion for additional reading for his section consists is the article entitled *Cross-cultural Cognitions and the Venture Creation Decision* appearing in the October 2000 43(5) issue of *The Academy of Management Journal* in which I, along with co-authors J.B. Smith, K.K. Seawright, and E.A. Morse, explain how theories of social cognition,

Section 3-4: Implications For Industries

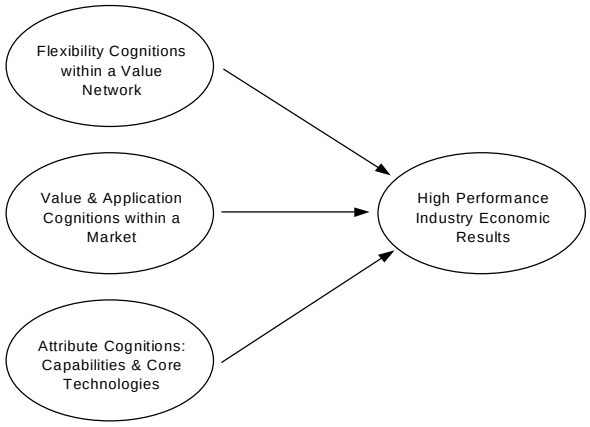
Background

Although study of the economic well being of industries has been the province of strategy and finance scholars for some time, little work has been done as yet, that relates cognition sets directly to the performance levels of industries. However, some relatively recent work that provides a foundation for such an analysis does exist (Christensen, 1997), and it is upon this foundation that this "exploratory" section of Chapter 3 is built.

An investigation into the factors that link entrepreneurship and strategy to the economic health of firms (Rumelt, 1987: 141) suggests that the variance in long-run profitability *within* (emphasis in original) industries is three to five times larger than the variance *across* industries and suggests that there are likely to be regularities operating at the industry level of analysis regardless of type. And, given research that has documented community level cognitions within transacting groups that are aggregations of firms (Porac et al., 1989), it seems reasonable to suggest that perhaps some of these regularities are cognitively based. Thus, in taking an exploratory approach to suggesting possible constructs that might qualify as examples of planning, promise and competition cognitions at a level of analysis between the firm and the economy levels, I have drawn some examples from Professor Christensen's analysis of the effects of technological change on industries: the disk drive industry in particular, in which he proposes a value network framework (Figure 3-15) for the assessment and management of innovation (Christensen, 1997).

FIGURE 3-15

A Value Network Framework



information processing, and expertise provide the foundation for operationalizing a cross-cultural model of venture creation that links cultural values to venturing scripts and the venture creation decision. In the article, hypothesized relationships using Analysis of Variance and data from 677 respondents in seven countries on the Pacific Rim, were examined and support was found for the cognitive model. Arrangements, willingness, and ability scripts were found to be associated with the venture creation decision, while some two-way interaction effects involving arrangements scripts were also significant.

Daft and Weick (1984: 286) define organizational learning/cognitions to be "certain knowledge about action that dominates the organization's relationship with its environment." As a part of his set of recommendations, Christensen identifies three sets of knowledge as the basis for action within industries, which seem to fall under Daft and Weick's definition. Thus, Christensen's analysis and recommendations, in suggesting what may seen as one approach that industry members use to sustain the growth of their industry, lead us to consider three constructs as sample planning, promise, and competition cognitions at the industry level of analysis.

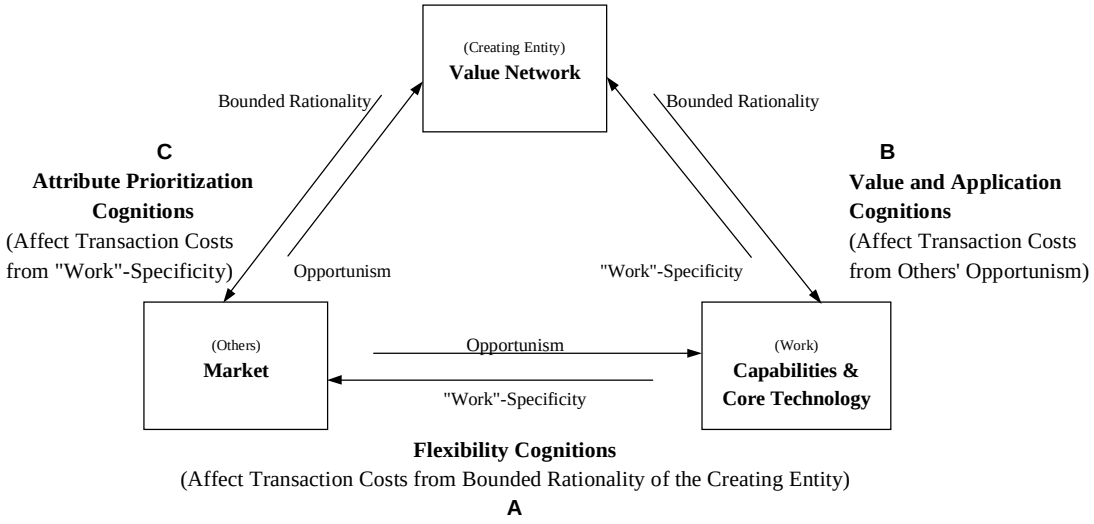
Flexibility, Value and Application, and Attribute Prioritization Cognitions

Christensen (1997) suggests that to achieve sustained growth in the face of environmental technological change, "the issue may be the relative flexibility of successful established firms v. entrant firms to change *strategies and cost structures* (emphasis in original), not technologies" (Christensen, 1997: 55). It seems to take but a small leap of insight to recognize industry level planning cognitions—the utilization of the social frictions associated with bounded rationality by groups of firms—to be implicit in this recommendation. Flexibility in planning at the industry level of analysis has been noted as a key determinant in sustainable growth by other authors as well (Collins & Porras, 1995). Further, Christensen suggests that a key determinant of commercial success (that the promised exchanges in fact take place) requires "value and application" cognitions to understand market needs within value networks (1997: 54). And then, in relation to the capability to correctly rank-order the relevance of differences in the performance attributes of products across different value networks (the work), Christensen suggests product "attribute prioritization" to be critical (1997: 55). Accordingly, as examples of planning, promise, and competition cognitions at the industry level of analysis, flexibility, value and application, and attribute prioritization cognitions are suggested.

As suggested earlier in this chapter, the model that is used to derive the independent variables in the Transaction Cognition Theory of high performance economic results is a fully scalable multi-level model. Figure 3-16 illustrates the combination of the relationships at the industry level of analysis proposed in Tables 3-1 and 3-4. In the following section, each of the suggested scripts will be analyzed at the level of the firm, according to the transaction cognition model to produce a definition of that script in terms of Transaction Cognition Theory. A diagram explaining the link between Transaction Cognition Theory and each script will also be provided.

FIGURE 3-16

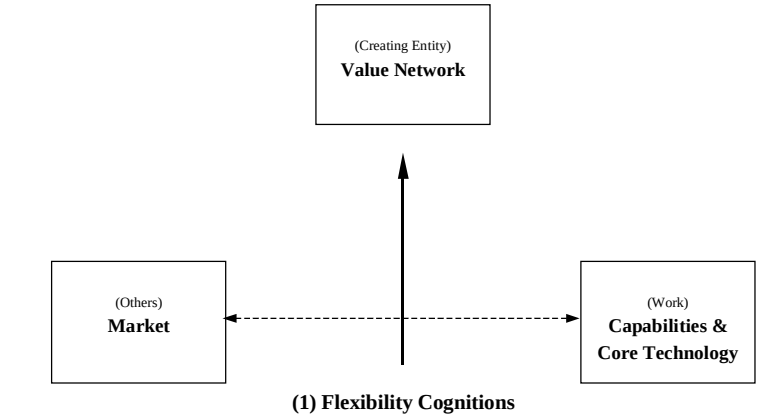
The Transaction Cognition Theory Model at the Industry Level of Analysis



Based on Gardner (1993); Williamson (1985)

(1) Flexibility. In the industry-level planning process the value network (the transaction creator) must gather, process, comprehend, and utilize the information necessary to organize the delivery of the value inherent in the capabilities and core technology (the work) to a market for these skills and technologies (other persons in the marketplace). This includes the enactment of industry operating practices and standards of commerce such as those in the knitwear industry in Scotland previously noted (Porac et al., 1989), and requires the marshalling of the contacts, relationships, resources, and assets necessary. As illustrated in the diagram below, flexibility scripts primarily involve overcoming the limitations inherent within the value network (transaction creators) through planning the connection of the capabilities and core technologies created by the existence of the value network (the work) to the market (other persons), and as shown in Figure 3-16 above, are a type of planning cognition:

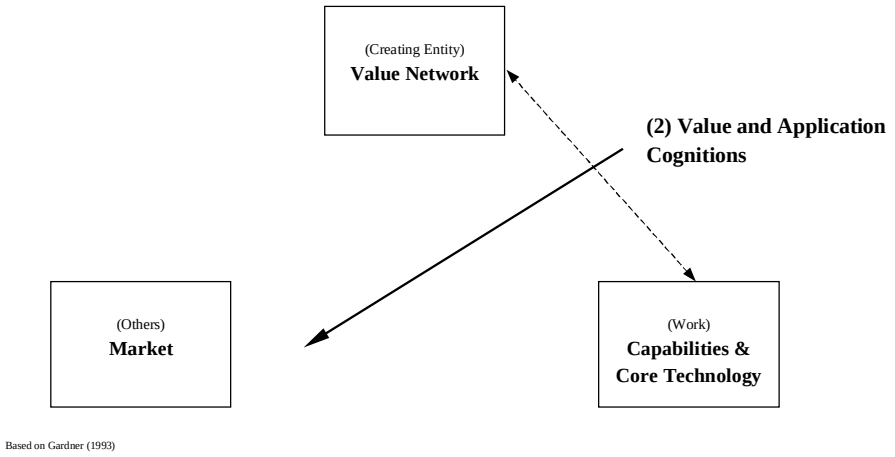
FIGURE 3-16$_a$



Based on Gardner (1993)

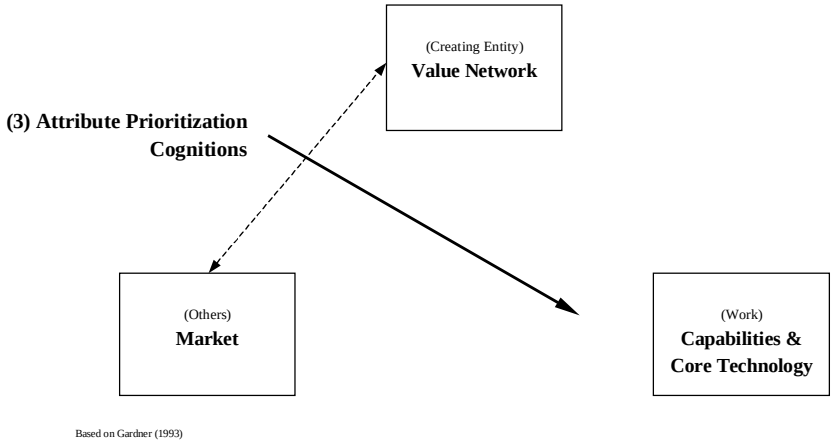
(2) Value and Application. Value and application cognitions result from the value network (the transaction creator) assessing the capabilities and core technologies, to estimate their promise to profitably satisfy the wants of a market (other persons in the marketplace). As illustrated in the diagram below, value and application scripts primarily involve understanding the wants of "other persons," and as shown in Figure 3-16 above, are a type of promise cognition:

FIGURE 3-16$_b$



(3) Attribute Prioritization. Attribute prioritization cognitions consist of the knowledge structures or scripts that help members of a value network (the transaction creator) to connect with a market (other persons), to identify products or services that the market wants, and to creates a capabilities and core technologies that can be produced competitively. As illustrated in the diagram below, attribute prioritization scripts primarily involve understanding "the work (or capabilities/ technologies set)" that the market wants and as shown in Figure 3-16 above, are a type of competition cognition:

FIGURE 3-16$_c$



Transaction Cognitions and Industry Growth

At the industry level of analysis, industry growth is one of the more commonly accepted measures of the influence that planning, promise, and competition cognitions might have on high performance economic results. In this section, we have explored how flexibility, value and

application, and attribute prioritization cognitions (Christensen, 1997) qualify as industry level examples of planning, promise, and competition cognitions as suggested by Transaction Cognition Theory. Christensen (1997: 53) suggests that the boundaries of possibility within industries are strongly delimited by the value network, which in such a role, serves as the creating entity within the groups of firms that I have defined as the industry level of analysis. Christensen suggests that the skills and strategies that result from his work are useful in helping companies to stay atop their industries when they confront certain types of market and technological change (1997: ix). It is therefore reasonable to suggest that the cognitions that I have imputed from Christensen's work—flexibility, value and application, and attribute prioritization cognitions—can serve as solid examples of independent variables that are related to this important high performance economic result: industry growth (Greenspan, 2001). Thus it is expected that,

> *Proposition 3-1$_e$: Flexibility, value and application, and attribute prioritization cognitions acting together are positively related to the occurrence of industry growth.*

Section 3-5: Implications for Economies

Introduction

What cognitions are crucial to the economic well being of a national economy? It seems logical to expect that as the level of analysis becomes more general, that examples of the human cognitive maps that are necessary within "communities of cognition" (Baumard, 1999: 15) at higher levels of analysis should also become more general. To answer the question, then, we seek exemplars in works that focus on analysis and recommendations at the economy level of analysis.

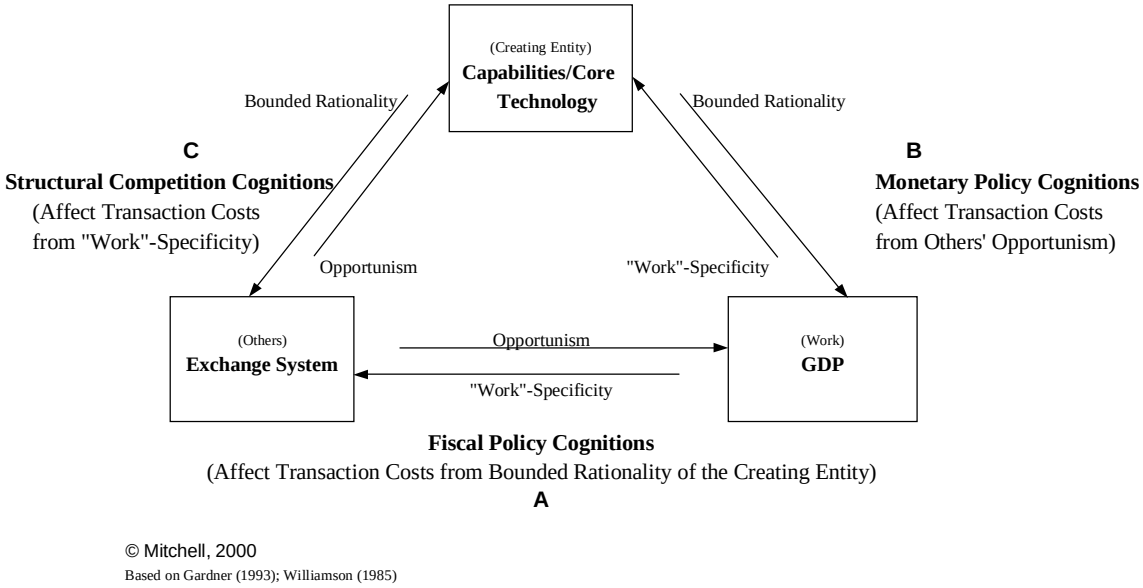
In his own privately-funded analysis of the U.S. economy, Thompson (1989) sets forth an argument that produces three policies aimed at the proper management of a regulated market economy to generate sustained growth. Thompson characterizes proper management of regulated markets at the economy level of analysis as the "management of competition," and argues that improving such management would "alleviate the problems of poverty, homelessness, inflation, and (unacceptably) slow productivity growth" (Thompson, 1989: 2).

Thompson's analysis is useful in suggesting example transaction cognition because the three policies he suggests appear to quite closely parallel the transaction model, focusing on the organizational cognitions needed by the main transaction creators at the U.S. economy level of analysis—the Federal Reserve Board, and the U.S. Federal Government—who (paraphrasing Daft and Weick, 1984: 286) apply knowledge to frame the actions necessary to effectively interface with the forces in a national economic environment. In this proposed example, he Federal Reserve Board and the U.S. Federal Government become transaction creators because they represent the cumulative stock of capabilities and core technologies of the U.S. economy (Figure 3-17) as determined (respectively) by political appointment and the electoral process.

FIGURE 3-17

The Transaction Cognition Theory Model

At the Economy Level of Analysis



Based on Gardner (1993); Williamson (1985)

Thus, Thompson's three policies that deal, in turn, with fiscal policy, monetary policy, and policy that improves the intensity of "structural competition (reduces monopoly power)" (Thompson, 1989: 3) provide excellent examples[44] of the Planning, Promise, and Competition Cognitions illustrated in Figure 3-17 that are critical to a high-performance U.S. economy. This subsection sets forth Thompson's arguments in summary, and relates the key ideas to Transaction Cognition Theory.

The Thompson Analysis

Cast as an analysis of the effective management of competition, Thompson (1989) adopts an approach that is quite consistent with the objectives of this monograph (to ascertain the planning, promise, and competition cognitions that promote high performance economic results in the material welfare sense), and with the attempt within this monograph, to provide well-articulated constructs that can serve as examples of the transaction cognition model at the economy level of analysis. As earlier noted above, Thompson's thesis is that three policies, properly implemented would " . . . go a

[44] To place the cognitive approach to the attainment of economy-level high performance economic results within the larger context, it should first be observed that a cognitive approach to solving economy level problems vies with other well-articulated approaches toward the attainment of national high performance economic results. Published journal and magazine articles that have dealt specifically with the issue of economy-level high performance economic results suggest that access to natural resources (Wright, 1995), effective trade and export practices (Blank, 1984; Waldron, 1997), and the use of political methods (Briggs, 1983; Lucas, 1994) are also considered to be alternative pathways for the achievement of national high performance economic results. Nevertheless, articles also appear, although not yet in the majority, that deal—at least implicitly—with two of the cognition sets suggested by Transaction Cognition Theory: planning (Barabanov, 1993; Leander, 1994), and competition (Rudolph & Routman, 1999) cognitions.

long way toward improving the management of competition to, in turn, alleviate the problems of poverty, homelessness, inflation and slow productivity growth" (Thompson, 1989: 2). These three policies (to preserve their order as originally presented by Thompson) follow the revised pattern: promise, planning, and competition cognitions.

Policy #1: Inflation and Monetary Policy Cognitions (Promise).

As his first policy, Thompson (1989: 2) suggests that:

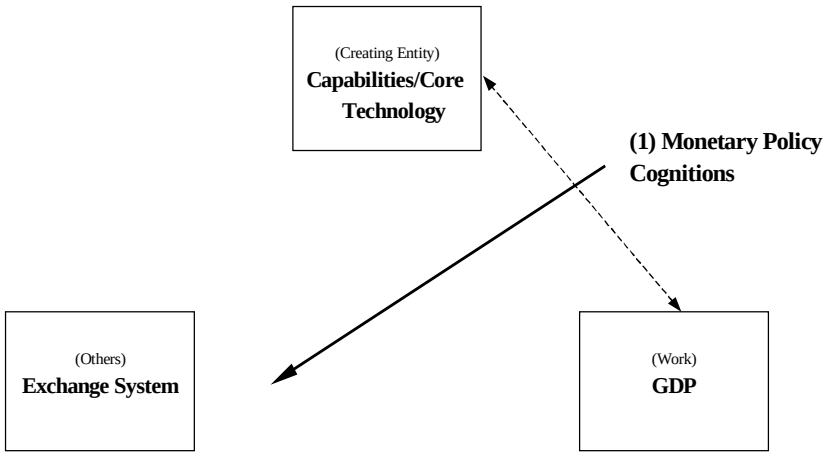
> The Federal Reserve should drive the inflation rate . . . down to a low level, say 2 or 3 percent, and then maintain as top priority the prevention of the acceleration of inflation. The second priority should be to keep demand, production and employment growing as rapidly as possible without the acceleration of inflation.

When we consider the socioeconomic elements that provide the foundation for the existence of money (and all that money's existence implies for the attainment of high performance economic results)—productivity, trust, and information, as discussed in Chapter 1—we can readily observe that the absence of trust is fatal to high performance economic results at the economy level of analysis (Olson, 1998). And, as discussed earlier in this monograph, the primary purpose of promise cognitions is to promote trust within socioeconomic relationships. So when inflation—the devaluation of money—occurs within an economy, this breach of economic promise has a direct and deleterious impact upon the high performance economic results of every participant in that economy.

At the economy level of analysis, it takes highly specialized knowledge to accomplish such a sophisticated objective. As stated in Thompson Policy #1, in the case of the U.S. economy, the responsibility falls to the leaders of the central bank—The Federal Reserve Board—to understand the relevant factors sufficiently well that effective monetary policy cognitions can be developed and utilized within the group such that inflation is kept under control, and demand, production, and employment are able to grow as rapidly as possible without the acceleration of inflation.

In his book, Thompson makes the implicit point that effective Monetary Policy Cognitions require an in-depth understanding of the effects of monetary policy decisions upon competition itself. He describes how, through regulation of the money supply, monopoly power (which increases when structural competition is lacking) may be restrained through the use of a special kind of competition: below-capacity competition (Thompson, 1989: 3). As illustrated in Figure 3-17$_a$ in the process of managing monetary policy, the Federal Reserve Board (the transaction creator) assesses the GDP-producing process (the health of the economy as shown by leading economic indicators, etc.), to estimate its promise to profitably satisfy the expectations of economic actors within the exchange system (other persons in the marketplace). As illustrated in the diagram below, the monetary policy "subscript" primarily involves understanding expectations of economic actors within the exchange system as "other persons," and as shown in Figure 3-17 above, is a type of promise cognition.

FIGURE 3-17$_a$



Based on Gardner (1993)

Thompson convincingly demonstrates that most inflationary pressure (the pressure to break currency value promises) is the result of either weak structural competition/monopoly power, or high wage-gain norms (1989: 150-151). In each case, the promise that the value stored in money will not erode is threatened by the inflation of prices, or of wages. Effective Monetary Policy Cognitions are those that can keep structural competition strong (which, incidentally implicates the Justice Department in the enforcement of anti-trust statutes) such that the increases in unemployment that are triggered by restrictive monetary policy, and result in below-capacity competition, are unnecessary.

Of course, theoretically, economy level cognitions do not appear to be restricted to use at the level of national economies. Conceptually, Transaction Cognition Theory at the economy level of analysis ought to apply as well to economies of any size: smaller or larger, national or regional, limited or extensive. However, in the case of Monetary Policy Cognitions, where a currency-issuing nation state is not the economy in question, then the surrogates for the restriction or loosening of the money supply, for monopoly power/price gains, and for high wage-gain norm/wage increases, must be identified. The key point is that Monetary Policy Cognitions serve well as an example of promise cognitions at the economy level of analysis. We now turn to Thompson's next policy, and its implications for planning cognitions.

Policy #2: The Budget and Fiscal Policy Cognitions (Planning).

As his second policy, Thompson (1989: 3) suggests that:

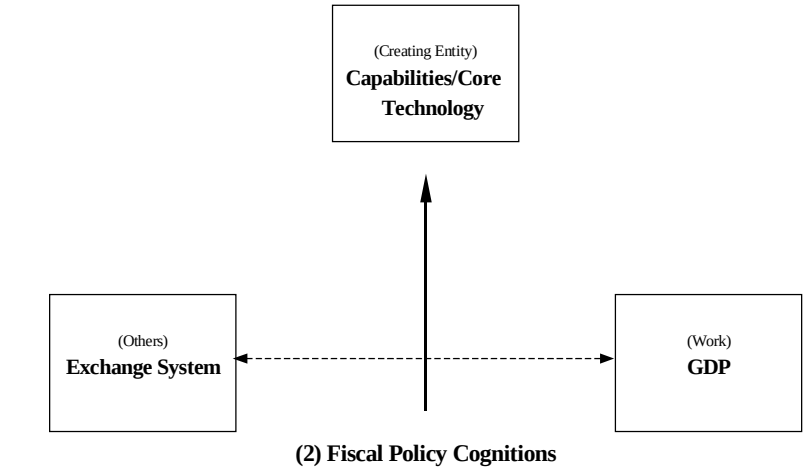
> The Federal Government should speed the movement toward balancing its fiscal budget and complete that balance . . . not with gimmicks but with real spending cuts, and tax increases. Then it should hold the deficit to near zero except in times of recession.

The balancing of the budget for a national government requires an exceedingly high degree of skill and coordination. Incomes must be identified and estimated with reasonable accuracy. Proposals for expenditures must be evaluated for necessity or merit, and their costs also estimated with reasonable accuracy. Similar to the firm at a lower level of analysis, the work at the economy level of analysis is also

split into sublevels: one being the actual GDP that government itself produces, and the other being the GDP of the national economy, which governmental GDP profoundly influences.

Thus, in the federal budgetary and fiscal management process the government (as the transaction creator) must gather, process, understand, and utilize the information necessary to organize the delivery of its work (sublevel 1: the services expected of government within the exchange system; and sublevel 2: the federal budget as a finance product that sends signals—through the degree "in" or "out" of balance—to the financial markets about, for example, the potential for economic stimulation or the need to borrow to finance government programs) to other persons (economic actors within the national exchange system) as illustrated in Figure $3\text{-}17_b$. As illustrated in this diagram, fiscal policy scripts primarily involve the cognitions that are needed to overcome the information limitations inherent within the membership of budget management team of the national government (e.g. the appropriations subcommittees of Congress in the legislative branch, and the Office of Management and the Budget in the executive branch, as transaction creators) through planning the connection of national GDP (the work) to market actors in the exchange system (other persons in the marketplace), and as shown in Figure 3-17 above, are quite evidently considered to be a type of planning cognition.

FIGURE $3\text{-}17_b$



Policy #3: Structural Competition and Below-Capacity Competition Cognitions (Competition).

As his third policy, Thomson (1989: 3) suggests that:

> Governments should take steps to improve the intensity of "structural competition" (reduce monopoly power) in both product and labor markets.

Thompson focuses most of the attention in his analysis toward the proposal and justification of Policy #3 and observes—as I have found myself doing with its competition cognition counterparts at other levels of analysis e.g. (Mitchell, 1992; Mitchell & Morse, 2001)—"it is the most neglected of the three policies" (Thompson, 1989: 3). Thompson states:

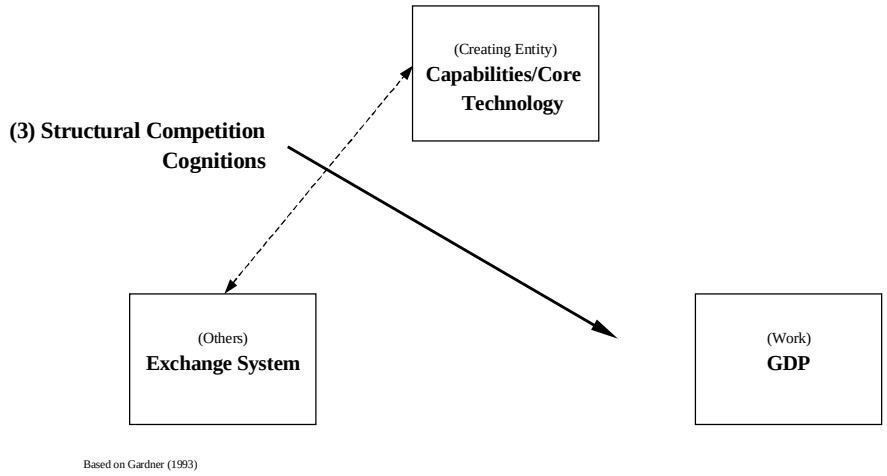
> Improved structural competition is necessary so that when the Federal Reserve stimulates demand, production and employment will rise—not wages and prices (1989: 3).

> Effective competition is essential to the proper operation of a free enterprise system. It is Adam Smith's 'invisible hand' that turns the self-interest of the individual into actions that benefit others It is both motivator and disciplinarian. Self-interest is a powerful force. But as we have seen in thousands of instances all over the world, the self-interest of those who run our economic systems often leads to grotesque behavior when tat self-interest is not properly directed by effective competition (1989: 2).
>
> Monopoly is the opposite of competition. Entrenched monopolies—whether they are in corporations, labor unions, governments, universities, professions, or perhaps even churches—usually end up having an adverse impact on human society. Arrogance, insolence, inefficiency, and complacency are too often the hallmarks of monopoly (1989: 2).

Thus Structural Competition Cognitions are thought to be critical at the economy level of analysis.

With respect to the Transaction Cognition Theory Model (FIGURE 3-16$_c$), structural competition scripts used by the federal government (the transaction creator) connect government officials with economic actors in the marketplace (other persons within the exchange system), and identify government actions such as the passing of anti-trust laws and their enforcement (works) that benefit these persons. As illustrated in the diagram below, structural competition scripts primarily concern generating GDP for the benefit of all participants in the exchange system (v. only a few monopolists), and as shown in Figure 3-17 above, is a type of competition cognition.

FIGURE 3-17$_c$



Transaction Cognitions and Sustained Economic Growth

Transaction Cognition Theory suggests that with requisite cognitions, transaction costs are more likely to be utilized to enable transacting. Thompson (1989: 4-5) asserts that a number of benefits, which combine to create sustained economic growth, as reasonably be expected fro the implementation of his three suggested policies:

- Full employment without inflation.
- Improvement of the lot of marginal workers. Marginal workers are insecure, low-paid workers. Since 1969 they have suffered most from unemployment and have seen their relative wages continually decline. They are a major part of the poverty problem in

America today. Indeed, we will argue that the implementation of the three policies is the only way we can solve the poverty problem in America.

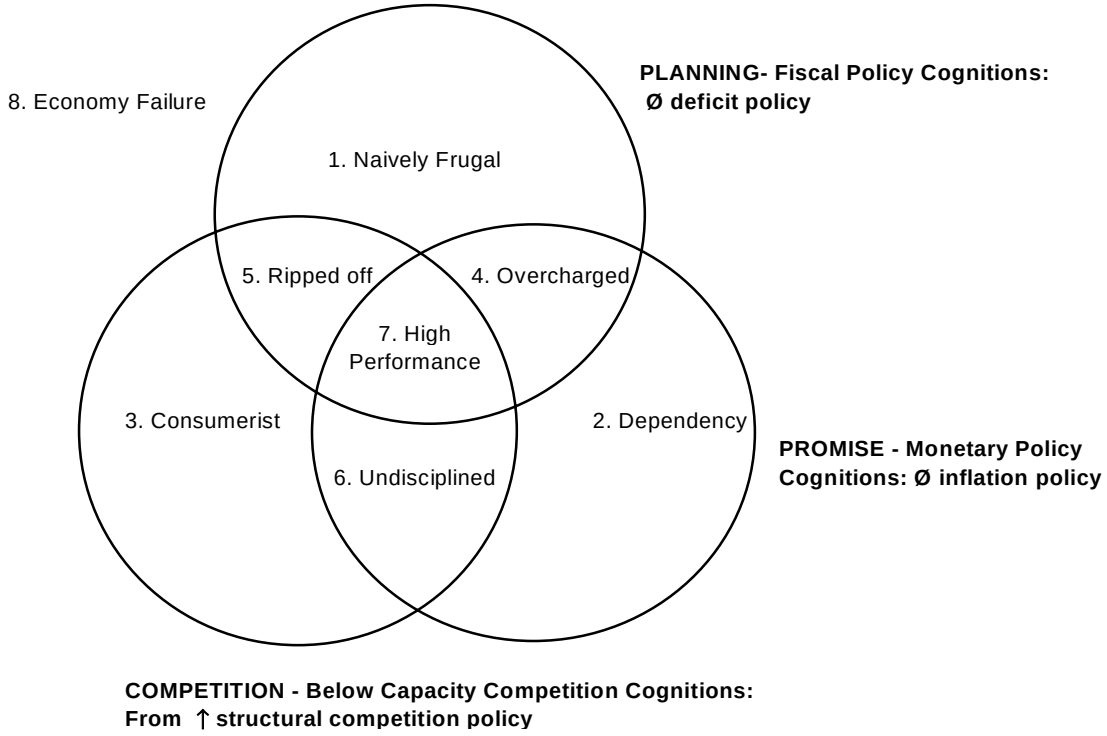
- Decline in interest rates . . . which would mean that the American dream (of owning a home) would become a reality for many more families. Another positive effect of a decline in interest rates would accrue to the less-developed countries (LDCs) . . . (which) would have a dramatic effect in speeding the modernization of third world countries and thus would help to alleviate the poverty problem around the world. (Domestically) lower interest rates would make possible increased spending on the country's infrastructure . . . (which) would improve the productivity of the . . . economy.

Since it has been well documented (Thompson, 1989) that fiscal policy, monetary policy, and structural competition cognitions are directly connected to the high performance economic result of sustained economic growth, it therefore seems likely that:

Proposition 3-1$_f$: Fiscal policy, monetary policy, and structural competition cognitions acting together are positively related to the occurrence of steady growth[45] *in an economy.*

As illustrated in Figure 3-18, the absence of any one of the foregoing cognitive scripts would be likely to produce less than high performance. Figure 3-18 illustrates some possible consequences of partial cognitive capability at the economy level of analysis.

FIGURE 3-18
Economy Level Variations in Outcome Condition
As a Function of Planning, Promise, and Competition Cognitions



[45] In late January 2001, in his testimony before the Senate Finance Committee of the US Congress, Federal Reserve Chairman Alan Greenspan cited steady growth as the desirable policy objective at the economy level of analysis.

Section 3-6: Implications For Societies

Introduction

At the society level of analysis, Planning, Promise, and Competition Cognitions are rooted in the norms, values, and assumptions about how transactions should be enacted. In this section, I suggest that the level of high performance economic results within a society varies depending upon the existence and resilience of societal level Planning, Promise and Competition cognitions within a given society.

Early in the last decade, I had the opportunity—as the former Soviet Union began to unravel—to consider the implications of this phenomenon in light of transaction cost economic theory (Mitchell, 1992). I developed several propositions, which turn out in hindsight, to be an early specification of planning promise and competition cognitions as now better described by Transaction Cognition Theory. In attempting to answer the question: What cognitions are crucial to the development of the high performance economic results of a society, it may be observed that the cognitions that fall within the transaction cognition model are very much rooted within the norms, values, and assumptions about how transactions within particular societies should be enacted. This chapter sets forth these propositions in summary.

Independent Variables

I originally undertook the task of applying transaction cost economics after a conference on the developments in Eastern Europe and the former Soviet Union held at the University of Utah in 1991, while I was a doctoral student. In seminars on international strategy and organizational economics, we had been studying the *fundamental transformation* due to transaction cost economizing, of transaction bundles from market into hierarchies (Williamson, 1975). It occurred to me at a time and place of meditation, that transaction cost theory should also apply in reverse: to the transition from hierarchy to market. At the time, I was unaware of earlier work (Kontorovich, 1988; Kroll, 1988) that had recorded this insight, but had not then, nor even to date as far as I am aware, fully developed its implications. Thus, at perhaps the second or third meeting of the International Association for Business and Society (IABS), held in Leuven, Belgium in 1992, I thought it appropriate to further address the questions that arise as societies attempt to move from "hierarchy to market."

The result, is an analysis that is quite inextricably bound up in transaction cost economic jargon; yet one which appears to be standing the test of time with respect to derivation and rigor. Also, in another paper now under review with the journal of the Macroeconomic Society of China, I suggest the application of these propositions to the Russia/China comparative case (Mitchell et al., 2001). Further, in a Canadian case, Professor Eric Morse and I apply the model to the case of aboriginal peoples in Northwest British Columbia who are living under the command economic structure of the reserve system, and who also desire to transform the economic foundation of their society from hierarchy to market (Mitchell & Morse, 2001). In the basic analysis back in 1992, I developed four propositions, three of which (as noted above) are examples of the competition, promise, and planning cognitions that are rooted in the norms, values, and assumptions that societies adopt surrounding the question of how transactions should be enacted.

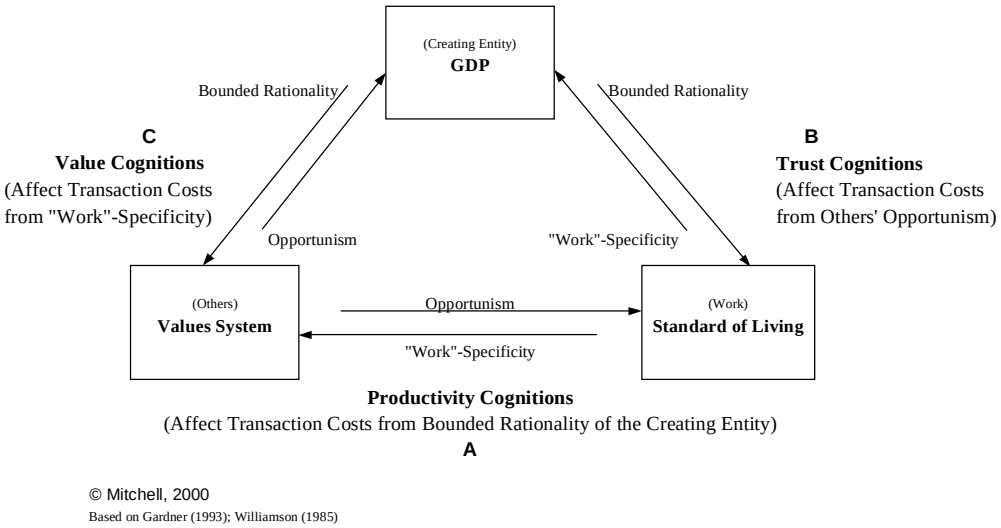
My thesis at the societal level of analysis, is that these three propositions, properly attended to through appropriate public policy would lead to " . . . (1) the attenuation of chaos, (2) the establishment of fundamental soundness in hierarchy to market transition, and most importantly, (3)

the potential for better preparation of both physical and human assets for market governance (Mitchell, 1992: 238). In short, by abiding by these principles, a higher performance, more economically independent society can be the result.

The three propositions under discussion, stated in the original order presented in 1992, follow the pattern: competition, promise, and planning, cognitions as illustrated in Figure 3-19.

FIGURE 3-19

The Transaction Cognition Theory Model at the Society Level of Analysis



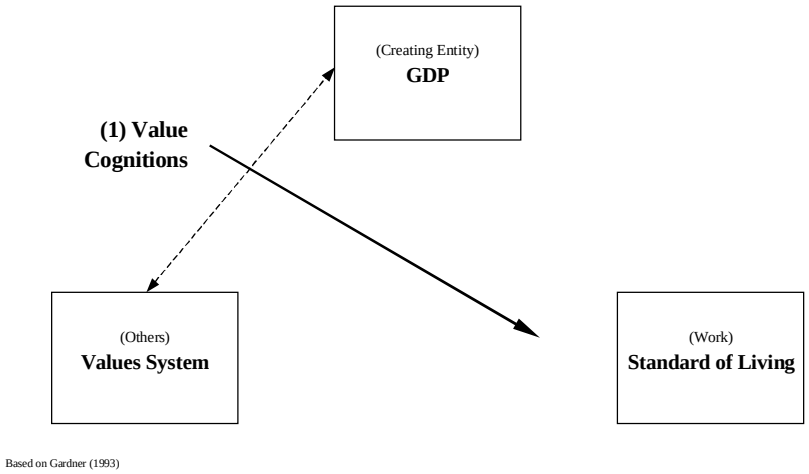
Based on Gardner (1993); Williamson (1985)

As suggested earlier in this chapter, the model that is used to derive the independent variables in the Transaction Cognition Theory of high performance economic results is a fully scalable multi-level model. Figure 3-19 illustrates at the society level of analysis the combination of the relationships proposed as examples in Tables 3-1 and 3-4.

Proposition #1: Value Cognitions and Specificity Alignment (Competition). As my first proposition, I have suggested that:

"To the extent that physical or site specificity exists as a consequence of . . . (a) command economic structure, transaction costs will be minimized where hierarchies are left intact" (Mitchell, 1992: 235). This proposition consists of a special case of the more general proposition, which relates competition cognitions to high performance economic results; and in the case of the society level of analysis relates value cognitions to the achievement of prosperity and cultural well being.

FIGURE 3-19$_a$



Transaction Cognition Theory suggests that these relationships are expected to hold because value cognitions are thought to be one of the three necessary cognitive conditions for societal level transactions to succeed. That is, members of a society expect that their productivity (GDP) will, with respect to their values system, accomplish certain quality and quantity aspects of their standard of living as illustrated in FIGURE 3-19$_a$.

My original Proposition #1 (above) is a special case of this argument since the specificity-hierarchy intactness argument suggests that certain prior works (hierarchies) be preserved as a part of present plans (GDP creation approaches) to minimize the transaction costs (the costs of running the economic system as defined by the values system of the society) experienced by other persons within this very large socioeconomic transaction.

Proposition #2: Trust Cognitions and Property Rights (Promise). As my second proposition, I have suggested that:

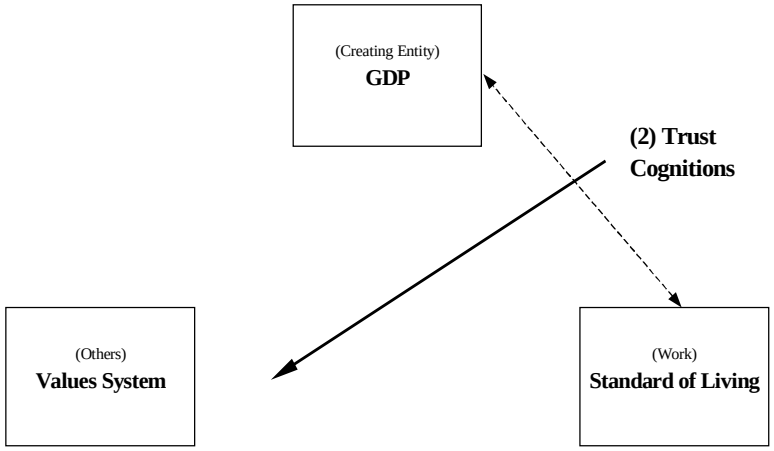
"To the extent that property rights are strengthened, the transaction costs in terms of dislocations and chaos will be attenuated" (Mitchell, 1992: 235). Once again, this proposition consists of a special case of a more general proposition, in this case, the one that relates promise cognitions to high performance economic results; and in the case of the society level of analysis relates trust cognitions to the achievement of prosperity and cultural well being.

Transaction Cognition Theory suggests that these relationships are expected to hold because trust cognitions are also thought to be one of the three necessary cognitive conditions for societal level transactions to succeed. In this case members of a society expect that their productivity (GDP) will, with respect to their standard of living, accomplish keep the promises that matter to them as defined by their values system, as illustrated in FIGURE 3-19$_b$.

My original Proposition #2 (above), which suggests that the strength of property rights is related to the transaction costs in terms of dislocations and chaos is a special case of this argument since the notion of property rights, is—in fact—a society-level agreement on the kinds of promises that will be made about their standard of living to members of the society (other persons) in consequence of their participation in the creation of GDP. The philosophical issue surrounding property rights has been aptly summarized in the novel *Les Miserables* where the idea is proposed that two issues preoccupy society: the production of wealth, and its distribution (Hugo, 1982(1862)). Dislocation and chaos

(e.g. revolution) result where these promises are unclear, unreliable, or unacceptable. Based upon this reasoning, it can be seen how trust cognitions can be related to prosperity and cultural well being.

FIGURE 3-19$_b$



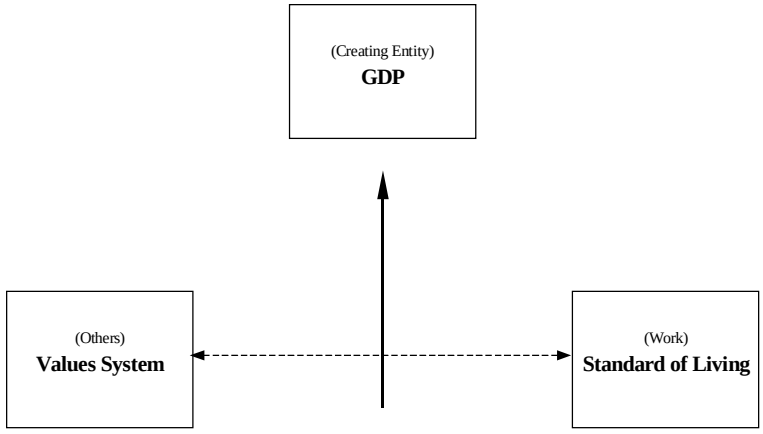
Based on Gardner (1993)

Proposition #3: Productivity Cognitions and the Management of Waste and Inefficiency (Competition). As my third proposition, I have suggested that:

"Where action is taken by societal actors to eliminate waste or inefficiency within firms, the move from hierarchy to market should be stimulated (through reversals of the fundamental transformation) while the prospect of firm failure is attenuated" (Mitchell, 1992: 236). Similarly to the prior two arguments, this proposition consists of a special case of a more general proposition, in this case, the one that relates planning cognitions to high performance economic results; and in the case of the society level of analysis relates productivity cognitions to the achievement of prosperity and cultural well being.

Transaction Cognition Theory suggests that these relationships are expected to hold because productivity cognitions are also thought to be one of the three necessary cognitive conditions for societal level transactions to succeed. In this case members of a society expect that their productivity (GDP) will result in a standard of living consistent with their values system, as illustrated in FIGURE 3-19$_c$.

FIGURE 3-19$_c$



My original Proposition #3 (above), which suggests that action taken by societal actors to eliminate waste or inefficiency at lower levels of analysis affect transaction costs in terms of aggregate hierarchy survival (e.g. firm survival v. disaggregation) is a special case of this argument since the notion of productivity, is—along with trust (DelMar, 1968 (1896))—the society-level means for the creation of value, with money being one of the tangible forms of evidence that GDP has been created. Based upon this reasoning, it can be seen how productivity cognitions can be related to prosperity and cultural well being.

Productivity, Trust, and Value Cognitions and Prosperity and Cultural Well Being

Having argued the point in the foregoing paragraphs, both as to special and general cases, it seems logical to suggest that:

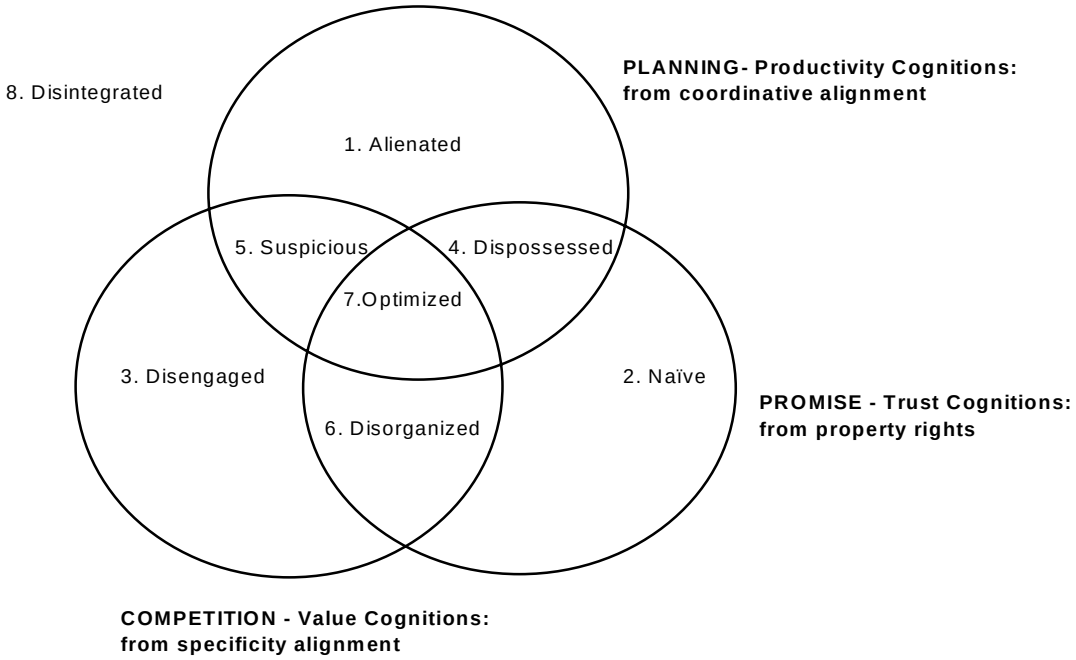
> *Proposition 3-1$_g$: Productivity, trust, and value cognitions acting together are positively related to the occurrence of prosperity and cultural well being in a society.*

As illustrated in Figure 3-20, the absence of any one of the foregoing cognitive scripts would be likely to produce less than high performance. Figure 3-20 illustrates some possible consequences of partial cognitive capability at the societal level of analysis.

FIGURE 3-20

Society Level Variations in Outcome Condition

As a Function of Planning, Promise, and Competition Cognitions



I recently completed a set of case studies that illustrates the variety of outcomes that have been observed as a result of the relative absence or presence of transaction cognition in the case of native populations in Northwest British Columbia, Canada (Mitchell & Morse, 2001). Along with co-author Eric Morse, I report that in both optimized (area 7) and non-optimized (all other areas in the diagram) circumstances, the transaction cognition model was useful in the development and explanation of the various situations, and furthermore in the generation of recommendations for community/society level strategies for moving toward healthier and more vibrant market economies in these communities. This conclusion has been confirmed as well in meetings with the leaders of the various native communities affected.

Social Friction, Social Organization, and Entrepreneurship

An idea that merits further exploration at the society level of analysis is the notion that increased entrepreneurship within societies is the natural consequence of the emergence of sophisticated markets. That is, it may be likely that the classic face-off between capitalism and socialism, for example, may have been more about the capability to effectively manage transaction costs/ social frictions, and less about the ideologies proffered to justify different transaction cost management approaches. In a longer-term context, then, the macro-institutional organizational forms (feudalism, the city-sate, empire, command socialist economies, etc.) observed throughout history may well be considered to be "transitional forms," in existence only as what was formerly a fundamentally physical power-dominated world society, changed to a global society that is dominated by socioeconomic power in the form of global markets. Whereas central planning figured prominently in the former forms, entrepreneurship—the capability to create successful new transactions anywhere on the globe—figures prominently in the latter.

Domination by physical power presumes primarily that physical force (brutal and efficient) is the primary solution to the problem of economic scarcity. With the development of individual rights and democracy, the power base began shifting from the few, to the masses. The use of socialist assumptions at the state level, to retain the concentration of economic power in the hands of the few between 1850 and 2000, may therefore be viewed through the lens of Transaction Cognition Theory as a natural response to this sea change. However, when viewed as an adaptation of society to the new market assumptions, which fundamentally depend upon information and efficiency as previously argued in Chapter 2 of this monograph, state sponsored socialism can be seen as a transition form, because in most cases it has demanded that (or at very least permitted) physical force to be used to sustain it. In essence, secrecy, fear, and other such coercive information asymmetries were applied to market matters to achieve the ends of power. It is not lost on observers who contemplate history from the vantage point of the year 2001, that this fundamental insertion of physical power into the emergent market system, which by its very nature permits optimization only through the utilization of information power (i.e. to use transaction cognitions to organize exchange relationships to channel market imperfections to create value), effectively forestalled within the societies that were controlled through coercive information asymmetries, the formation of markets at the level of sophistication achieved by non-coerced economies.

As the momentum of the market gained impetus worldwide, the anachronistic nature of this power-based model became ever more apparent, eventually operating to the demise or dramatic revision of those systems. However, with the relative reduction of physical force to enforce transacting norms, other means to exercise market power have taken their place. These models are also information-based i.e. they apply mental force v. physical force with respect to information. Where this has occurred, hierarchies may be formed (or permitted to remain in existence) coincident with the existence of efficient markets, because informational advantages transform market slippage or drag, into glide and traction (as previously discussed in Chapter 2).

I have argued earlier in this monograph that entrepreneurship is a term that may be utilized to accurately describe the role of those who understand how to create new transactions that otherwise would have failed due to transaction costs/ social frictions. The role of entrepreneur required in this new economic reality may thus be to act as the rationalizing force in hierarchy/ market boundary-spanning. This role has been little understood, principally because transitional assumptions (i.e. that physical power v. market power would triumph) precluded our recognition of the entrepreneurial role as fundamental. However, now that it is clear that markets are preeminent—given restraint from war (which may be viewed as an extension of Transaction Cognition Theory as an admission by an aggressor of incompetence in the capability of that society to manage transaction costs/ social frictions) the role of the economic alternative to the market: entrepreneurial governance of hierarchy, is brought into focus.

Hierarchies therefore are now thought to exist as a consequence of markets (Williamson, 1985; Williamson, 1991). With the emergence of sophisticated markets, scarcity (i.e. the need for efficiency in the form of better utilized transaction costs/ social frictions), created a new governance structure. This governance structure—as developed in this chapter—consists of a multi-aggregational hierarchy of transactions which owes its existence to decisions made “at the margin” by entrepreneurs, who use cognitive initiative to shape the social frictions inherent in transacting as a socioeconomic phenomenon, in the face of bounded rationality, opportunism and asset specificity where uncertainty and frequency are characteristic of the transacting environment.

Hence, absent physical force as the rationalizing aspect of economic organization, transaction cost economizing and the concept of the management of the fundamental transformations through the use of transaction cognitions, are logical new approaches to the management of scarcity. It now

appears to be likely that "entrepreneurs" make decisions at multiple levels of analysis regarding the substitution of hierarchy for market at the margin. Whereas previously power was attained as a consequence of prowess in the strategy and tactics of the exercise of physical force, power appears increasingly to be exercised as a consequence of prowess in the strategy and tactics of recognizing and actualizing the opportunities available from the creation and control of hierarchies within a sophisticated market economy through the use of transaction cognitions, the capability to create successful new transactions anywhere on the globe, in short, through global entrepreneurship. In the next chapter, a Transaction Cognition Theory of global entrepreneurship is developed[46].

Summary

Chapter 3 was written to accomplish two objectives: First, to develop the idea that comparability between physical and economic systems leads to the logical derivation of levels of analysis in economic systems. Second, to explore in more detail some of the processes for utilizing social friction in the accomplishment of high performance economic results at these various levels for individuals, firms, industries, economies, and societies.

Hopefully, the ideas presented within Chapter 3 contribute to the understanding and interpretation of the cognitive processes that lead to the high performance economic results that we have come as people to expect at many levels of economic analysis (the firm, industry, economy, etc.). In the following chapter, the logical extension of the idea of cognitive initiative is further developed as a theory of global entrepreneurship is proposed.

[46] Although further discussion is admittedly necessary at all levels of analysis discussed in Chapter 3, such discussion and analysis has been left for further work, by those scholars who are specialists in the areas where my specialty does not extend.

PART 3

DISCUSSION

CHAPTER 4

A TRANSACTION COGNITION THEORY OF GLOBAL ENTREPRENEURSHIP

Introduction

Global entrepreneurship is the capability to create new transactions that achieve high performance economic results anywhere on the globe. Until it was understood within the scholarly community that a new global economy had emerged (Friedman, 2000), traditional entrepreneurship theory—especially in the West—has focused on such definitions of entrepreneurship as: "the creation of new ventures" (Low & MacMillan, 1988), or "the pursuit of opportunity without regard to resources currently controlled" (Stevenson & Jarillo, 1990). This has led to questions from within the global scholarly community about how 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, due to the globalization of the world's economy, we also need globalize entrepreneurship theory (McDougall & Oviatt, 2000).

This two-section chapter presents a transaction-cognition theory of global entrepreneurship that is intended to help to open a new path for entrepreneurship research and teaching. In the first section, I provide a brief summary of assertions made in Chapters one through three, which suggests a relationship between transaction cognitions and transaction success that forms the foundation for a theory of global entrepreneurship. In the second section, I explore the implications of this theory for the path to an experimental science of 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). Thus, in this second section I examine the global entrepreneurship assertions of Transaction Cognition Theory from several critical viewpoints: its capability for explanation, its theoretical and operational utility, and its verifiability through the logic of scientific inference.

Section 4-1: A Theory of Global Entrepreneurship

In this monograph I have introduced Transaction Cognition Theory, and in earlier chapters have explained how—as a theory—it may be derived from a fundamental model of the transaction using principles from cognition and transaction cost economic theory. In this chapter I shall attempt to explain why I believe a Transaction Cognition Theory definition of entrepreneurship also qualifies as a definition of global entrepreneurship—a definition that itself "crosses borders" (McDougall & Oviatt, 1997: 293).

As described in more detail earlier in the monograph, he path that I have followed to develop such a definition follows a direction suggested by 1973 Nobel Prize winner Kenneth Arrow who, in 1969, drew attention to an equivalence in economic systems, to friction in physical systems. Arrow (1969: 48) asserted that "transaction costs" are the economic equivalent to "friction" in physical systems. With this suggestion as a starting point, I have asked questions such as:

- What unit of analysis in a physical system crosses borders? and
- Is there a comparable structure in economics?

In meetings with colleagues from around the globe, I have been able to agree with them that the "atom," specifically the planetary model of the atom, qualifies as a suitable answer to the first

question. I have then transformed the second question to ask: What is the equivalent in economic systems, to the atom in physical systems? Figure 1-1 illustrates a suitable answer. In this monograph, I have proposed the "transaction" as represented in Figure 1-1 to be the economic equivalent of the atom in physical systems. With this model available, I have argued that a basis now exists for the elaboration of a model of entrepreneurship that is not compromised in its rigor or veracity by the crossing of geographical/ cultural borders. Thus, I suggest that the first standard for a workable model of global entrepreneurship is that such a theory should be based upon the "transaction" as the basic unit of analysis.

However, if we wish to pursue further use of the physical/ economic analogy, we encounter a second standard that must also be satisfied: The economic model suggested must correspond to laws that also cross borders. Recall that Professor Arrow has used the concept of friction to enable us to draw the physical-economic parallel, and that the economic equivalent of friction in physical systems is thought to be "transaction costs." And recall further that Arrow (1969) has defined transaction costs to be the costs of running the economic system—ANY economic system. Thus, I have argued in Chapter 2, that if we can similarly relate the manner in which transaction costs are utilized to achieve results in economic systems to the way that friction is utilized to achieve results in physical systems, we can propose a theory of economic results that crosses borders.

Section 2-2 of Chapter 2 examines how friction is utilized in physical systems by taking the example of the automobile, and describing how the 4 states of friction shown in Figure 2-5 apply. In a well-working automobile, the bearings "glide," the tires have "traction," the gears do not "slip," and there is low "drag" due to wind resistance. This high performance physical 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. In Chapter 2, I then suggest that high performance economic results might be created by design also, using effective levels of planning promise and competition cognitions.

I therefore argue that in the cognitions of entrepreneurs as the designers of new transactions, we have identified through the use of Transaction Cognition Theory, a specification of certain fundamentals that we can expect to observe across borders. It then remains for us to elaborate how the design activity (Simon, 1981) in the arrangement of socioeconomic systems—the creation of new transactions—ought to take place. Recall that Williamson (1981: 552) has suggested:

> "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?"

We are then constrained to ask: How is it, then, that harmony can be increased, and malfunctions decreased in transacting systems? As noted as an introduction to the ideas in this monograph, psychologist William James (1890) has suggested that the greatest discovery of this modern age is the idea that "we become what we think about."

Recent entrepreneurship research suggests that common economic thinking patterns exist globally (Busenitz & Lau, 1996; McDougall & Oviatt, 2000; Mitchell et al., 2000). And, as

introduced in Section 3-3 of Chapter 3, there is empirical evidence which suggests that these thinking patterns fall into the three cognitions sets necessary for transaction success: planning, promise, and competition cognitions. Transaction Cognition Theory suggests that new transactions succeed in cases where the individual transaction creator possesses sufficient levels of each of these cognitions. Thus general and specific definitions of global entrepreneurship may therefore be offered as follows:

General Definition of Global Entrepreneurship: To cause a transaction to succeed which would have otherwise failed due to transaction costs/ social frictions.

Specific Definition of Global Entrepreneurship:

- *To use transaction cognitions (Planning, Promise, Competition)*
- *to organize exchange relationships (among Individual, Other persons, & the Work)*
- *that utilize the transaction costs/ social frictions created by market imperfections (Bounded Rationality, Opportunism, 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.

Accordingly, the foregoing argument suggests the following:

Proposition 4-1: Planning, promise, and competition cognitions are associated with the occurrence of successful transactions anywhere on the globe.

Transaction Cognition Theory thus provides a basis for a definition of global entrepreneurship that is highly integrative, and is useful for research, teaching, and practical technology for the creation of new transactions anywhere on the globe. In Chapter 5 following, I discuss the teaching and technology applications of Transaction Cognition Theory in both market and transition economies, and suggest a framework for the transfer and induction of transaction cognitions anywhere on the globe—a plausible approach for teaching global entrepreneurship. In the following section, I attempt to chart some of the milestones to be observed on the path to an experimental science of entrepreneurship.

Section 4-2: The Path to an Experimental Science of Entrepreneurship

As in most pre-paradigmatic periods of theory development (Kuhn, 1970), the field of entrepreneurship research whole might be expected to consist mostly of "random fact gathering" (Leahey, 1987: 16). The term entrepreneur, for example, is now in common usage; but without the benefit of a commonly understood meaning it is in danger of becoming meaningless. A little while ago, as a simple test of this assertion, I conducted a Netscape search using the ABI Inform *ProQuest Direct* internet library, and found over 150 articles[47] published during the first two months of 1999 using the term entrepreneur* (where "*" is a wildcard indicator in Boolean search logic). In these articles, I found that the term entrepreneur was used in reference to phenomena at the individual, firm, and industry/economy levels of analysis and included diverse meanings such as: (1)

[47] Represented in the analysis are 45 articles in *Success* magazine, 12 in *Nation's Business*, 8 in *Forbes*, 6 in each of *Black Enterprise* and *Journal of Business Venturing*, 5 in *Inc.* magazine, 4 in *Fortune*, and 3 in each of *The Economist*, *Time*, and *Working Woman;* with 68 appearing in other publications that include (non-exhaustively) *Academy of Management Review, Barrons, Business Week, Executive Excellence, Library Journal, Strategic Management Journal,* and the *Venture Capital Journal*.

unemployed individuals who are willing to create their own job (Economist, 1999: 67), (2) firms or individuals that take initiative to introduce a new combination of resources (McGrath, 1999: 14), or (3) an ethnic group that makes progress finding jobs in a particular industry (Prewitt, 1999: 41). In past literature some common meanings of the term have included: (1) the pursuit of opportunity without regard for resources currently controlled (Stevenson & Jarillo, 1990), (2) the creation of new ventures (Low & MacMillan, 1988), or (3) the creation of an environment in which all members of an organization can contribute to the organizational function (Cornwall & Perlman, 1990: 8). But without a common basis for understanding, the divergence of meaning will continue to be a disability in entrepreneurship research in general (Shane, 1996), in global entrepreneurship research (McDougall & Oviatt, 1997), as well as in its practical applications: entrepreneurship education (Katz, 1991: 87), and entrepreneurship technology—a relatively new but important outcome of entrepreneurship research that might be thought of as: the application of entrepreneurial science to commercial objectives.

The lack of a common basis for understanding the meaning of entrepreneur"*" poses commensurability problems similar to those that occur due to the lack of a common denominator in arithmetic operations (working with fractions, for example) and prompts a paradigm organizing "shared exemplars" - type challenge to the field (Kuhn, 1970): Produce a theoretically and empirically valid set of common terms for field of entrepreneurship. However, like the creation of common denominators in the case of arithmetic, the creation of common terms for the field of entrepreneurship requires that each expression in an analysis be representable using these common terms. But as previously noted in Chapter 3, entrepreneurial phenomena occur on at least two levels of analysis: the individual and the firm. So, according to commonly accepted standards of scholarship, common terms must—like their arithmetic counterparts—enable cross level analysis, and as such, utilize "cross level theory" that may nevertheless be permeable to, and testable with "data at the lowest measurement level possible" (Rousseau, 1985: 29, 31).

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). And, as previously developed in Chapters 2 and 3, the fields of physics and genetics both offer cases that illustrate the development of composition theory that simultaneously suggests a more basic level of measurement. In physics, as alluded to earlier, the development of the planetary model of the atom by Neils Bohr provided a theoretical structure that could explain matter at the subatomic, atomic, molecular, etc. levels, while at the same time suggesting a basic level of measurement. In the field of genetics Crick and Watson, in developing the double helix model of DNA, provided a theoretical structure that could explain the development of living organisms at multiple levels of analysis, while also identifying a more basic level of measurement. These analogues motivate the investigation and identification of an economic equivalent to physics' planetary model, and genetics' double helix, that utilizes composition theory and produces basic measures to provide common denominator-based understanding of entrepreneurship.

In this monograph, drawing on the cross-level theories of transaction cost economics (Williamson, 1985) and social cognition (Fiske & Taylor, 1984), I have developed what I believe qualify as common-term general and specific definitions of entrepreneurship that are not only realistic—in that they correspond to actual economic behavior in the real (imperfect) economic world—but are tractable by two key ideas: (1) the composition of the basic transaction across borders, and (2) the cognitions across borders that explain its occurrence in imperfect markets; together suggesting a transaction-cognition theory of global entrepreneurship.

In subsequent paragraphs I hope to demonstrate that the foregoing qualifies as a rigorous definition of global entrepreneurship that provides the basis for further analysis both within this monograph, and hopefully in future research as well. It is my hope that the specification (Chapter 2) of the market imperfections that are basic to transacting, their impact on exchange relationships, and the resulting cognitions that are critical to successful transacting will assist researchers in interpreting prior research, and in proposing entrepreneurship theoretical models that flow from first principles. In service of this objective—as promised earlier—I shall next examine the global entrepreneurship assertions of Transaction Cognition Theory from several critical viewpoints: its capability for explanation, its theoretical and operational utility, and its verifiability through the logic of scientific inference.

The analysis proceeds in four subsections as follows. In the first, I evaluate the capability of Transaction Cognition Theory for explanation through an examination of prior research to determine the capability of the theory to serve as the common term: to explain previously observed phenomena, and to explain phenomena that prior theory has been unable to explain (Popper, 1979: 46). In the second subsection, I evaluate the theoretical and operational utility of the transaction-cognition model to: resolve some of the present theoretical difficulties in entrepreneurship research, simply relate previously unconnected things, predict phenomena which have not so far been observed, and be better testable (1979: 47-48). In the area of better testability I present analyses suggesting the operational utility/ susceptibility to operationalization of the theory (Freeman, 1986; MacMillan & Katz, 1992; Mitchell, 1994a). I conclude this section with an examination of the verifiability of the theory using the logic of scientific inference for evaluating the construction of Transaction Cognition Theory as a social theory (Stinchcombe, 1968).

Subsection 4-2.1: The Capability for Explanation

Somewhat fortuitously, present explanations within the field of entrepreneurship fall quite easily into research path groupings that focus attention on entrepreneurial individuals, work, and economy levels of analysis. This body of theory and findings forms the foundation of the field as it is presently understood, chronicling the lists of previously observed phenomena, and identifying phenomena that prior theory has been unable to explain. In this monograph, I have analyzed representative work from this foundation literature, and have summarized the results in Table 4-1.

TABLE 4-1: Transaction-Cognition Explanations of Some Observed Phenomena

Theory	Findings	Transaction-Cognition Theory Explanation
	• The Individual (Entrepreneur)	
Age. 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 is the key variable (Ericsson & Charness, 1994; Gardner, 1983).
Education. 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).
Gender. 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).
Immigration. 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.
Locus of Control. 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).
Need for Achievement. 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, 1994a).
Religion. 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, 1994a; Gist & Mitchell, 1992).
Risk-taking Propensity. 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).
Social Learning. Social learning and genetics lead to variance in traits, that 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 et al., 1993), which depends upon individuals' endowments (Ericsson & Charness, 1994; Gardner, 1983; Gardner, 1993).

TABLE 4-1(continued)
Transaction-Cognition Explanations of Some Observed Phenomena

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

It may be seen in Table 4-1, that observed phenomena within these three groups are interesting and extensive (Column 1), although some observations have been contradictory (Column 2), which understandably has created an obstacle to theory building. However, these observed phenomena appear to be coherent when examined using the lens of transaction-cognition theory as framed herein (column 3). The likely transaction-cognition theory explanations are proposed in this analysis to demonstrate the capability of transaction-cognition theory to serve as the necessary common term: to explain previously observed phenomena, and to explain phenomena that prior theory has been unable to explain (Popper, 1979: 46). An examination of this assertion follows for each of the groupings.

The Individual (Entrepreneur)

As summarized in Table 4-1, at least eight major theoretical reasons for the occurrence of entrepreneurship at the individual level of analysis were investigated during the most active period of investigation: 1961 - 1986. Of these, 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 lead many colleagues in the management sciences to view entrepreneurship theory with distrust (MacMillan & Katz, 1992).

However, as shown in the table and discussed below, the transaction-cognition theory explanation for the findings do suggest a common-term explanation that accounts for previously observed phenomena, as well as for phenomena that prior theory has been unable to explain due to falsification (Popper, 1979: 46). At the individual level of analysis, the previously observed phenomenon in question is the regular, but not adequately explained appearance of the individual entrepreneur. As the special edition editors note in their lead article in an issue of the *Journal of Business Venturing* dedicated to theory building in the field of entrepreneurship (Bull & Willard, 1993: 183):

> (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.

And, although one of the latest and most comprehensive studies of this phenomenon (Shane, 1996) demonstrates that the rate of entrepreneurship in the U.S. economy has varied over time, and that these variations are not random (1996: 761), the theory that can account for all of the findings is lacking. So despite earlier studies that chronicle levels of entrepreneurship (Evans & Leighton, 1986; Steinmetz & Wright, 1989), and in a similar vein identify a variety of reasons for the variations, present research in the field is characterized by Shane at this stage of development 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 developed in this article appears to shed light on this problem. As noted earlier in the article, transaction costs represent the consequences of social friction on exchange behavior. At the organizational level of analysis, the concept of transaction costs has been utilized extensively to argue that hierarchies (firms) and markets are alternative systems for governing transactions 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 could explain a variety of alternative system choices at various levels of analysis, including the individual level.

Thus, for example, there are well-documented instances reported as "prospect theory" (Kahneman & Tversky, 1979) where (in psychological prospect) losses loom larger than gains (1979: 288), and individuals' actual utility has been found to be less than expected utility—a difference likely due to transaction costs[48]. 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" v. 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). Making the choice between venturing or job-holding requires the use of specialized cognitions that individuals possess about creating social arrangements based upon promise (e.g., scripts that help in identifying and prioritizing stakeholders thereby building trust in economic relationships) to help them to predict which choice is likely to be more reliable. Promise-based cognitions assist individuals in assessing the likelihood that those with a "stake" (Clarkson, 1995; Mitchell et al., 1997) in the economic well being of that individual 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 v. entrepreneurial employment—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 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, I may have high transaction costs relative to self-employment and see more "promise" in employment with such an organization. Alternatively, if I have been raised in a setting where the mental models of self employment have been readily available and have been internalized by me with positive self-efficacy (Gist & Mitchell, 1992; Krueger & Dickson, 1994; Krueger & Dickson, 1993), then I may have high transaction costs relative to seeking job employment 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:

[48] Prospect Theory (Kahneman & Tversky, 1979) provides one of the most clear illustrations of the transaction costs that arise from bounded rationality. Essentially Kahneman and Tversky found that the actual value of economic choices made by individuals (actual utility) was less than the possible value (expected utility) because individuals ignored or overweighted highly unlikely events, or neglected or exaggerated highly likely events due to: *reflection effects* (emphasis in original)—risk aversion in the positive domain and risk seeking in the negative (1979: 268), and *isolation effects*—disregarding the commonly shared attributes of decisions to focus on the distinguishing ones (1979: 271). According to Prospect Theory, these effects arise due to cognitive errors that occur in individuals' *coding, combination, and/or cancellation* (1979: 274) of relevant information, which taken together limit/bound rationality.

Proposition 4-2$_a$: The effective level of transaction cognitions (planning, promise, and competition, but especially promise cognitions) of individuals is associated with their entrepreneurial employment (the substitution of one state of individual transacting, entrepreneurial employment, for its alternative, a job, at the margin, due to transaction costs/ social frictions).

This idea of transaction cognitions explaining a wide variety of alternative system choices in the area of individual exchange relationships in an imperfect economy is demonstrated in Table 4-1. As cited in the table, both contradicted and non-contradicted findings are explainable using Transaction Cognition Theory as developed in this article. This framework thus offers the possibility that the discipline of global entrepreneurship is taking shape, and further suggests that specific planning, promise, and competition skills be identified and taught. In Chapter 5, the educational implications of the existence of a theory of global entrepreneurship are explored, and an outline for likely textual materials is proposed.

As earlier noted, entrepreneurship is a cross-level phenomenon. Thus, Transaction Cognition Theory suggests that individuals create firms using transaction cognitions. The discussion proceeds to examine explanations of this phenomenon next.

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 three of Table 4-1, 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 previously observed phenomena as well as for phenomena that prior theory has been unable to explain due to its ultimate falsification (Popper, 1979: 46). At the venture level of analysis, the previously observed phenomenon in question is the formation and performance (success v. 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 the 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 et al., 1990). According to the transaction-cognition model, ventures fail when plans fail, because planning scripts (e.g. cognitions that assist in responding to the limitations of bounded rationality) are expected to impact the utilization of transaction costs to effect success in transacting.

This simple but powerful idea appeals to the very essence of transaction cost economics: in short, confirming the notion that economizing (on transaction costs) is the best strategy/plan (Williamson, 1991: 76, 90). Williamson suggests that transaction cost economizing (e.g. waste elimination) can have as much as a 10:1 influence on results as compared to the effect of 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, the plan to manage

opportunism in a competitive marketplace can save a job or it can save a customer: a far more important result than the successful negotiation of wage rates, or sale prices. It is therefore likely that the success or failure of ventures will be correlated with the effective planning for (first order economizing on (Williamson, 1991: 78)) transaction costs—a huge public policy opportunity (e.g. cut waste, not wages; increase productivity, not prices).

Most of the foregoing analyses have been conducted using the US economy as a data source. Accordingly, it might be expected that the Western framing of the questions and the research (Hofstede, 1994) might pose a limitation on the generalizability of the research into global theory. However, the reader is reminded of the arguments presented in Chapter 3, specifically those presented at the firm level of analysis (Section 3-3) wherein it has been argued, and evidence has been presented that cognitive models (Busenitz & Lau, 1996), and specifically cross-cultural cognitive models of entrepreneurship (Mitchell et al., 2000) can explain significant high performance economic results (e.g. the venture creation decision).

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

Proposition 4-2$_b$: The effective level of transaction cognitions (planning, promise, and competition, but especially planning cognitions) of individuals is associated with the venture creation decision (the substitution of one state of hierarchical transacting, the decision to form a firm, for its alternative, the failure to form a firm, at the margin, due to transaction costs/ social frictions).

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 Table 4-1 is a summary of seven representative and generally supported theories of entrepreneurship which suggest that changes in technology, the demand for entrepreneurs, failure rates (contradictory), interest rate levels, political change, unemployment, and wealth levels are related to the size of the entrepreneurial group within an economy. As summarized in column three of Table 4-1, Transaction Cognition Theory also accounts for these findings, and further suggests a common-term explanation, that—at the economy level of analysis—accounts for previously observed phenomena as well as for phenomena that prior theory has been unable to explain due to falsification (Popper, 1979: 46). At the economy level of analysis, 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 bargaining positions—small or large) because engagement in the exchange process is based upon the decision whether to bargain/exchange/transact, or not. Where the need for economic security is defined as the desire to have provisions in store for an uncertain future (Durant, 1935: 2), and in a society where "provisions" are mainly obtained through exchange relationships, then logically, 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 occur due to lack of desire, or lack of uncertainty, or both, and—as summarized in column three of Table 4-1—higher levels of this need and the resulting competition cognitions, could explain the reason why the factors listed (change, demand, etc.) lead to variance in entrepreneurship levels within an economy.

Thus, the level of security seeking, and thereby the propensity to "compete" might 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 within a society. Thus, for those who do not seek to enter into exchange relationships, it is suggested that the transaction costs of competing within them are 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 4-2$_c$: The effective level of transaction cognitions (planning, promise, and competition, but especially competition cognitions) of individuals is associated with the level of entrepreneurship within a society (the substitution of entry into exchange relationships, for non-participation in exchange, at the margin, due to transaction costs/ social frictions).*

The implications of this proposition are quite broad, and illuminate the earlier stated transaction cognition definition of global entrepreneurship. Whereas Schumpeter has suggested 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" (Schumpeter, 1934: 78), the Transaction Cognition Theory-based definition suggests that the "in" v. "out" status of entrepreneurial activity occurs transaction by transaction, instead of business by business (unless of course each transaction constitutes a business). Thus, high performance economic results in an economy (such as sustained growth) occur where the obstacles to transacting are minimized (Williamson, 1996b: 332). As suggested in Chapter 2, under Transaction Cognition Theory, it is entrepreneurship that accomplishes this objective, through transformations of socioeconomic "slippage and drag," to those with "glide and traction."

Subsection 4-2.2: 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 of 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: in resolving some of the present theoretical difficulties in research, in simply relating previously unconnected things, in predicting phenomena which have not so far been observed, and in being better testable (Popper, 1979: 47-48). The following paragraphs are focused upon an examination of transaction cognition entrepreneurship theory with respect to these criteria.

Resolution of Some of the Present Theoretical Difficulties

The field of entrepreneurship needs better theory (Low & MacMillan, 1988; MacMillan & Katz, 1992). Despite calls at the political level (e.g. Newt Gingrich, former Speaker of the U.S. House of Representatives) for the encouragement of "maximum entrepreneurial behavior" in the US economy (Kimbro, 1995); and despite calls for more and better teaching of entrepreneurship within universities (Porter, 1997; Porter & McKibbin, 1988); weak theory leaves the field of entrepreneurship open at the very least to overdependence upon the unsystematic, the use of uncodified "war stories" of successful entrepreneurs (Katz, 1995) to provide guidance for scholars, policy-makers, and practicing and aspiring entrepreneurs; and at its worst, may lead to the abuse of the entrepreneurship concept by a wide variety of individuals who—undisciplined by sound theory and results—are free to invoke entrepreneurship in support or explanation of virtually any end or phenomenon (Harwood, 1982: 91; McMullan & Long, 1990: 57-58).

Existing entrepreneurship theory does explain some phenomena (e.g. the behavior of venture capitalists under various conditions (Hall & Hofer, 1993; Manigart, Wright, Robbie, Desbrieres, & DeWale, 1997)); but there are other phenomena that existing theory is yet unable to explain (e.g., as previously noted: when an entrepreneur might appear or engage in entrepreneurship (Bull & Willard, 1993: 183)). Further, the fields from which existing entrepreneurship theory has 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 they appear to be case-specific and suffer from lack of replication (Brockhaus & Horowitz, 1986; Sexton & Bowman-Upton, 1991). Strategy-based entrepreneurship research provides the tools to explain performance outcomes, but has had difficulty in linking these to the influence of the entrepreneur (Cooper, Willard, & Woo, 1986; Kunkel, 1991; MacMillan & Day, 1987; Sandberg, 1986).

Some of these theoretical difficulties are resolved (as demonstrated in the prior section of this chapter) by the capability of Transaction Cognition Theory to explain previous findings at several levels of analysis in the field. Further, when using Transaction Cognition Theory researchers are no longer constrained to view the economic, psychological, and strategic performance views as competing explanations; but rather they may now 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 economically- and personalistically-based theories, by suggesting the manner in which individual cognitions can influence venture strategy—through competition cognitions. And further (by taking the liberty of making a few substitutions for the sole purpose of drawing the parallels), it might be argued, for illustration purposes, that beginning even with some of the earliest scholarship in the field of entrepreneurship one can find the outlines of transaction cognition composition theory—and, for example, early economic stream writings may be seen to be consistent with writings within the early psychological stream.

To illustrate, one of the authors who provided part of the foundation for the entrepreneurial function within the economic stream argues: "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" (Baudeau, 1910: 51), indicating early recognition of the importance of knowledge in transacting, and foreshadowing the role of knowledge structures/scripts in explaining entrepreneurial behavior as defined within the transaction cognition model. The early outlines of planning, promise and competition cognitions can also be interpolated from the writings of a seminal author in the psychological stream. Jean Baptiste Say writes: "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, 1964 (1847): 331). A stretch? Perhaps; but perhaps not, if viewed with the analytical purpose in mind of evaluating whether Transaction Cognition Theory is permeable and well-suited to the resolution of some of the theoretical difficulties in three previously separate streams in entrepreneurship theory, even beginning at the earliest stages of their development.

Simply Relating Previously Unconnected Things

Prior to development of the relationships suggested in this article, 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 types of cognitions that affect transaction success. In addition, neither of these ideas had yet been associated with the notion that the utilization of general market imperfections (bounded rationality, opportunism, and specificity) to advantage through the use of specific cognition sets might be the essence of global entrepreneurship (Section 4-1).

It is beyond the scope of this monograph to develop more than a few of the implications of this new set of theoretical relationships for entrepreneurship research. Some of the most obvious implications of this new definition are the need to investigate and specify geographically and/or culturally exactly what cognitions and counter cognitions are included within each set of effective planning, promise, and competition cognitions. Another line of research should attempt to link the notion of specific market imperfections such as isolating mechanisms (Rumelt, 1987) to the more general set of market imperfections (bounded rationality, etc.). Still another line of research should attempt to reexamine the cross-level problems in prior research to ascertain whether new insight is available through the application of Transaction Cognition Theory. Also, since there exists a much more extensive set of theory and findings than that excerpted as a representative example in Table 4-1, 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 (e.g. Table 3-5; Propositions 4-1 and 4-2, etc.) 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 assist in framing new research questions—to predict new phenomena—must also be examined.

Predicting Phenomena Which Have Not So Far Been Observed

In the field of entrepreneurship—as a social science—"phenomena which have so far not 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 include phenomena not previously known to exist. In the following paragraphs a non-exhaustive discussion is presented to provide further support of Transaction Cognition Theory as a theory of global entrepreneurship.

New levels on existing relationships. In previous subsections in this chapter, the idea has been developed that existing relationships among entrepreneurship phenomena can be observed at three levels of analysis: the individual, the firm, and the economy. At present, data show that roughly 90% of the individuals in the U.S. labor force at any given point in time are not involved in entrepreneurship (Evans & Leighton, 1986); and that approximately 80% of individuals spend their entire careers in job employment (Steinmetz & Wright, 1989). Even the doubling of businesses per 1000 individuals in the 1980's from approximately 20 to approximately 40 (from 2 to 4 percent) (Gartner & Shane, 1995) does not provide much movement toward an equally probable career choice between job-employment and entrepreneurial employment. And, of the ventures created, a significant proportion fail (50 to 80 percent depending upon analysis technique) (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 kind of exchange behavior through their participation in the labor force (Levi, 1998).

Transaction Cognition Theory suggests that entrepreneurship occurs at the transaction level of analysis. Under this new definition of entrepreneurship, it is likely that the percentage of

individuals who are known to act entrepreneurially may be much higher than previously expected. Further, because of the relationship between transaction cognitions and transaction success (Chapter 2), we might expect that—as the level of transaction cognitions/scripts acquired by individuals increases—the levels of high performance economic results at various levels of analysis should also increase. However, every society contains a range of motivations to acquire and utilize transaction cognitions[49]. Accordingly the level of susceptibility to the acquisition and use of transaction cognitions is expected to vary geographically and culturally depending upon the proportion of this group as an initial condition. As suggested in Chapter 2, there is likely to be a transaction cognition acquisition sequence beginning with competition cognitions, and followed by promise and planning cognitions in that order; and it appears likely that the proportions of country populations or cultures that exist in each state proposed in Figure 2-10 will vary accordingly.

New relationships. One of the reasons that MacMillan and Katz (1992) have suggested an appeal to other disciplines for assistance in the development of entrepreneurship theory is that these somewhat older fields have encountered and solved problems that commonly occur in newer fields. As a natural outgrowth of theory development, and for illustration purposes, I wish to report one example of new theoretical relationships that might be predicted in entrepreneurship theory that I have—though extensive discussions with academic colleagues and practitioners—derived from Transaction Cognition Theory by the adaptation of a solution from the field of electrical engineering.

A problem that has been studied extensively in electrical engineering, 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 continued motion of an electric motor after power supply has ceased) are created. In electrical engineering, the level of reactivity or inductance *(I)* 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 follows:

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

Transaction Cognition Theory permits the formulation of the inductance problem in terms of entrepreneurship phenomena, where the level of inductance—the propensity for a transaction to fail—("sparks" or "shocks" in economic transacting) might be thought of as a function of the level of planning, promise, and competition cognitions (the reactivity or constant), multiplied by the rate of change in transaction flow. In electrical engineering the inductance problem is managed through the use of capacitors to store the wasted energy, or through the use of design, to lower the level of inertia (the reactivity constant). The storage of previously wasted energy, such as the study of learning from entrepreneurial failures is only beginning (McGrath, 1999). And one of the key implications of the theory proposed in this article is that the level of cognitive inertia in

[49] In every society there are individuals who lack the desire to exchange. This lack of desire might (non exhaustively) be due to a specific value choice (e.g. self-denial for a spiritual purpose), due to age (e.g. individuals too young or old to care for themselves), due to a disability (e.g. lack of awareness of need due to developmental difficulties), or merely due to an individual judgment that provisions in store are sufficient given the perceived level of uncertainty (e.g. one is rich, or rich enough), which of course also varies by case. For example, some locations on Earth are so congenial, and the societal norms so structured, that economic uncertainty is virtually irrelevant. In other instances, the accumulations (such as savings and pension) might be perceived by an individual to be adequate given the present level of uncertainty, but inadequate in times of high inflation, war, or natural disaster. Thus—depending upon the case—society, parents, or individuals themselves eliminate the need for the exchange behavior of some individuals.

entrepreneurship is susceptible to change (i.e. entrepreneurship as transaction cognitions can be taught) and therefore is susceptible to design.

Beyond the scope of this paper, is the further development of these solutions within entrepreneurship domain, and the analysis of the measurement issues, which later research must address. Doubtless other new formulations relating entrepreneurial phenomena can be derived using Transaction Cognition Theory as well, of which the transaction inductance formulation is but one example included herein to demonstrate theoretical tractability. Thus, though space does not permit further analysis, it should be noted that "transaction inductance theory," as an extension of Transaction Cognition Theory, does hold promise for assisting in the explanation of phenomena at the individual, firm, and economy levels (i.e. for the analysis of high inductance/change as it affects entrepreneurs, ventures, industries and economies), and provides some evidence that Transaction Cognition Theory is useful in the prediction of new relationships.

Phenomena not previously known to exist. One of the most exciting aspects of new theory development is that sound new theory predicts phenomena not previously known to exist, which 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 not yet be measured? Based upon the theoretical developments herein, it is suggested that researchers might expect the existence of stable planning, promise, and competition transaction scripts in a variety of contexts such as by technical field, by industry, across geography and cultures, within job employment, etc. So, for example, in empirical work, it should be possible to map the global culture of entrepreneurship among all individuals who have created a venture, regardless of their country of origin as suggested in Mitchell et al. (2000); or to map the expert script for rising to the top of particular organizations or industries.

Also, like chess masters (Chase & Simon, 1972) or other groups of superb performers (Ericsson, 1996) entrepreneurs should be susceptible to assessment as to level of expertise (a rating scale)—a distinct advantage for those asked to finance their ventures. The advent of the professional entrepreneur—evaluated for entrance in a manner similar to that of accounting, law, or medicine—as a consequence of the further development of Transaction Cognition Theory, is therefore also predicted. 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. Finally, should Transaction Cognition Theory prove to be efficacious, we might also expect 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); and that accordingly, social policies will be built explicitly around the enhancement of planning, promise, and competition cognitions, to thereby enhance overall levels of economic welfare within society as a whole.

Summary. Taken together the foregoing non-exhaustive set of possibilities demonstrates the capability of transaction cognition entrepreneurship theory to predict phenomena that have not so far been observed. Next, as foreshadowed in the preceding discussion, improvement in the testability aspects of the theory should also be examined.

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 be capable of contributing to each, and together they comprise the operational utility of a theory.

Data gathering. The creation of sampling frames in the field of entrepreneurship has often been problematic as it has been in most of social science research (Freeman, 1986; McDougall & Oviatt, 1997: 303; Pedhazur & Schmelkin, 1991). One of the reasons for this difficulty is the idiosyncratic nature of the phenomena in question (MacMillan & Katz, 1992). However, when reduced to the transaction level, many of the 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 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 are more able to capture the range of variance in independent variables (Freeman, 1986). Early results from studies that utilize transaction cognition research methodology, suggest progress in the attainment of these standards by demonstrating that while the likely alternative explanations for differences in cognitions—such as age or country—may be significant, transaction cognitions still explain significant variance within and across countries (Mitchell, Smith, Seawright, & Morse, 1999), thereby illustrating possible ways of ameliorating previous 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—as suggested—through the easing effect that improvements in methods of measurement (Nunnally, 1978) has upon the generation of sampling frames.

Measurement. Scholars who wish to investigate cognition-based models of entrepreneurship, but who are constrained in the operationalization of cognitive constructs by a lack of previously tested measures, are encouraged to explore use of the script cue recognition approach to the measurement of relevant variables (Mitchell, 1994a; Mitchell & Seawright, 1995; Mitchell et al., 1999; Mitchell et al., 2000). If prior operationalization in the field of cognitive psychology can be characterized as a micro approach (e.g. dependent upon micro observations such as eye movements in color recognition studies within an experimental setting to satisfy the time and space (Posner, 1973) criteria for cognition observability), then the script cue recognition approach that uses a formative indicators measurement logic (Howell, 1987: 121; Nunnally, 1978; Pedhazur & Schmelkin, 1991: 54) might be characterized as a macro-based alternative that enables significant results through sampling (Nunnally, 1978) v. the full enumeration of script cues.

Critics of transaction cost economics have long suggested that one of the critical flaws in the theory is its lack of susceptibility to measurement (Granovetter, 1985; Perrow, 1986). With the linkage of cognitions to the theory, to create a Transaction Cognition Theory of entrepreneurship, a positive step toward the measurement of transaction costs has been taken. Further research should focus on the elaboration of this insight as a means to suggest more generalized measurement techniques in the field of transaction cost economics and in transaction cognition entrepreneurship theory.

Data analysis. Based upon early studies that have utilized Transaction Cognition Theory to suggest sampling frames and measures, no barriers to the utilization of advanced statistical analysis have appeared at this stage of operationalization. Thus, where applicable, Transaction Cognition Theory has produced theory and measures that have been used successfully in analyses requiring

ANOVA and MANOVA procedures (Mitchell et al., 2000), exploratory, confirmatory factor and multiple discriminant analysis (Mitchell, 1994a; Mitchell & Seawright, 1995), and regression (Mitchell et al., 1999). In short, the concepts and measures of 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, and their utilization in advanced analysis (Mitchell, 1994a; Nunnally, 1978).

With the foregoing two subsections (the examination of the theory as to its capabilities for explanation and utility) as a foundation, the evaluation of a theory of global entrepreneurship based upon Transaction Cognition Theory may proceed to address its third objective. In the following subsection, the theory will be examined using the logic of scientific inference.

Section 4-2.3 Application of the Logic of Scientific Inference

In this section, one of the fundamental approaches to evaluating the construction of social theory (Stinchcombe, 1968) is employed to examine the present level of credibility of a Transaction Cognition Theory-based theory of global entrepreneurship. Summarized in this subsection is some of the exploratory research that was conducted in the early stages of theory development, and this evidence is evaluated according to Stinchcombe's criteria (1968: 20). These summarized studies include primarily my own published empirical investigations between 1994 and 2000, which hopefully will serve as a template for replication and further evaluation of the external validity of the theory. Accordingly, in the following paragraphs, a summary of four works will be presented: the Heizer Award nomination summary of my 1994 dissertation: *The Composition, Classification, and Creation of New Venture Formation Expertise* (Mitchell, 1994a), and abstracts of three published papers: a 1995 Babson Conference article: *The implications of multiple cultures and entrepreneurial expertise for international public policy* (Mitchell & Seawright, 1995), a 1996 qualitative research article *Oral history and expert scripts: Demystifying the entrepreneurial experience* (Mitchell, 1996), and a 1998 article containing multiple exploratory hypotheses in cross-cultural entrepreneurship theory: *Cultural values and venture cognitions on the Pacific Rim* (Morse, Mitchell, Smith, & Seawright, 1999).

The Logic of Scientific Inference

Stinchcombe (1968) explains how, under the positivist, falsification logic that is generally accepted as normal science (Kuhn, 1970) in the social sciences, theory may be subjected to increasingly stronger tests in an attempt to assess the credibility of theory according to the axiom: Theory that passes tougher tests is more credible than theory that passes only weak tests. Stinchcombe presents the four situations in Figure 4-1 to illustrate the point (where "⇒" means "implies").

FIGURE 4-1

Credibility and Tests of Theory

Stinchcombe, 1968

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

According to Stinchcombe, the relationships presented in Figure 4-1 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. 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" (1968: 20).

The four cases of exploratory research earlier introduced are therefore presented in support of the assertion that in the development of a theory of global entrepreneurship using the concepts of Transaction Cognition Theory, the foundation research record provides at least a "Situation III" level test. In Study 1, the association of cognitive variables with new venture formation was tested as to its composition, capability to classify, and then its capability to create new venture formation expertise, using data from the Western United States to test the theory. In Study 2, with composition held constant, classification was tested in two countries in addition to the USA: Mexico and Russia. In Study 3, the underlying concept that cognitive scripts are related to new venture formation was evaluated in the US setting (published) and in the Mexican setting (as yet unpublished) was evaluated using qualitative methods. In Study 4, 39 hypotheses based upon a more fine-grained composition of new venture formation expertise scales were tested in a seven country the Pacific Rim setting: Canada, USA, Mexico (North America), Chile (S. America), Australia, China and Japan (Asia). Note that the differences in things derived (Situation III) exist on a variety of dimensions:

- Across types of tests in Study 1
- Across sampling frames in Study 2
- Across data type in Study 3
- Across new types of tests and new sampling frames in Study 4.

Although the foregoing differences that have been tested are not necessarily "differences in implications," other tests have been conducted, which do broaden the implications spectrum (Mitchell & Chesteen, 1995; Mitchell et al., 2001; Mitchell & Morse, 2001; Mitchell, Morse, Smith,

& Seawright, 1998; Mitchell et al., 1998; Mitchell et al., 2000). Further, as the multi-level propositions suggested in Chapter 3, Table 3-5 are subjected to test, the variety of tested "different" implications is expected to increase.

However, I do believe that the studies conducted and reported to date are sufficiently representative of the other studies that the reader can, as I have done, reach a conclusion that the theory of global entrepreneurship proposed herein qualifies as at least "substantially more credible," with the potential to become "much more credible" in at least a relaxed interpretation of Stinchcombe's standards[50] as the research progresses. A summary of each of the studies follows.

Study 1: *The Composition, Classification, and Creation of New Venture Formation Expertise*

My first attempt to begin to investigate transaction cognition constructs was in my dissertation. The main premise of the research was to investigate whether the occurrence new venture formation is associated with individual expertise (Mitchell, 1994a: 7). The following reading is the summary submission to the Academy of Management Heizer Award Committee.

Introduction and theory summary. After over 200 years of study in the field of entrepreneurship, no theory that clearly explains when an entrepreneur might appear or form a venture has been developed (Bull & Willard, 1993: 183). To address this need, this dissertation explores new venture formation (hereinafter referred to as "NVF") theory using expert information processing theory (hereinafter referred to as "EIPT") as a catalyst. This dissertation answers the research question: Is the occurrence of new venture formation associated with individual expertise? An affirmative answer to the research question has implications for the composition, classification, and creation of NVF expertise.

Through three consecutive studies the research demonstrates that NVF expertise has identifiable components which can be measured (composition), that NVF experts can be distinguished from novices using these components and measures (classification), and that the NVF expertise of novices can be enhanced consistent with the predictions of EIPT (creation). In the first section of this abstract, the development of theory that leads to the research question and related propositions, hypotheses and the research model is described. In the second section the method used to accomplish the three studies is summarized. The third and fourth sections, respectively, report results, and discuss implications for research and practice.

Theory Foundations. The theories that have attempted to explain the relationship between the entrepreneur and NVF stem first, from research and theory building in the field of economics, which view the contribution of the entrepreneur to be the creation of new enterprises (Low & MacMillan, 1988; Rumelt, 1987; Schumpeter, 1934). Second, they stem from a characteristics-based approach that has been developed during the past 30 years through a great deal of research effort expended in attempts to "describe" entrepreneurs as the key component in NVF (Brockhaus, 1980; McClelland, 1961; Shapero, 1975). Third, entrepreneurship theory has developed as an outgrowth of strategic management research, where, during the past 10 years attention has been focused on how the performance of the venture itself is influenced by the entrepreneur. This stream is

[50] I would view a strict interpretation of the requirement: "B_1, B_2, B_3 different" to also include replication under a variety of new global circumstances and methods by other researchers who are not a part of my own research efforts and research team, and who therefore might create even more unique tests of the theory.

known as the new venture performance (hereinafter referred to as "NVP") -based approach (Herron, 1990; Kunkel, 1991; McDougall, 1987; Sandberg, 1986). At present entrepreneurship research stands at the confluence of the three literature streams: economic, characteristics, and NVP.

Unfortunately for the field, each stream has its shortcomings. For example, the economic stream has not been sufficiently operationalized. Even very recent journal articles advocate economic theories of entrepreneurship, but leave the empirical tests to future research (Baumol, 1993; Bull & Willard, 1993). Also, efforts to isolate psychological or demographic characteristics that are common to all entrepreneurs have met with failure. Apparently no "typical" entrepreneur exists (Brockhaus & Horowitz, 1986; Bull & Willard, 1993; Sexton & Bowman-Upton, 1991). Until Herron (1990) demonstrated that entrepreneurial skill and skill propensity are related to NVP, the persistent attempts of researchers in the NVP stream to link entrepreneurial characteristics to performance (Cooper et al., 1986; Kunkel, 1991; MacMillan & Day, 1987; McDougall, 1987; Sandberg, 1986) met with little success.

Yet, despite this lack of evidence, practitioners and venture capitalists continue to consider the individual who forms the venture to be critical to its success (Hall & Hofer, 1993; Herron, 1990; Sandberg, 1986; Stuart & Abetti, 1990). Thus actual practice within the entrepreneurship community differs from much of the research reported to date. Therefore, new approaches that explain the contribution of the entrepreneur to NVF are called for (Stevenson & Harmeling, 1990; Willard, Kreuger, & Feeser, 1992).

An Intermediate Step. In one new approach to understanding entrepreneurs and NVF, Bull and Willard (1993: 188) apply economic stream-based principles to theory building, proposing four constructs that focus on the entrepreneur as the catalyst for NVF: (1) venturing motivation, (2) expertise, (3) expectation of gain, and (4) environmental support. Unfortunately, little empirical support exists for a theory that relies on entrepreneurial characteristics such as motivation, except Herron's (1990) finding that the propensity for an entrepreneur to apply venture-related skills (skill propensity) is related to NVP.

Also, Bull and Willard's notion of expertise is narrow, corresponding more closely to the notion of ability or skill (Herron, 1990), than to the more comprehensive notion of expertise described and commonly accepted within information processing theory, the field where expertise has been studied for over 20 years (Lord & Maher, 1990). Finally, a theory that integrates characteristics-based constructs (motivation and expertise) with economic constructs (expectation of gain and environmental support) encounters the difficulties in operationalization that are typical of the economic literature stream. Because Bull and Willard do not operationalize their theory nor do they suggest a likely means to do so, a model that operationalizes their theoretical constructs is needed if progress toward a more explanatory theory of NVF is to continue.

An Expertise-based Approach. Recently, the information processing models of expert information processing theory (EIPT) have been introduced into the management domain (Lord & Maher, 1990). One model in particular, the expert information processing model, has constructs that appear to closely parallel the key NVF ideas of both Herron (1990) and Bull and Willard (1993) as illustrated in Table 4-2. The apparent similarity of EIPT constructs to the NVF constructs of Bull and Willard (1993) and Herron (1990), suggests the possibility that EIPT might be applied to improve our understanding of the role that individual entrepreneurs play in the occurrence of NVF.

TABLE 4-2

Parallels Among Three EIPT Constructs, and NVF Constructs
from the Entrepreneurship Literature

EIPT	**Bull and Willard**	**Herron**
. Ability	. Expertise	. Skill
. Willingness	. Motivation . Gain Expectation	. Skill Propensity . None
. Enabling Resources	. Environmental Support	. None

Research Question and Propositions. The need to operationalize a more explanatory theory of NVF, combined with the promise of EIPT to satisfy that need, stimulates the main research question guiding this dissertation:

> *Is the occurrence of new venture formation associated with individual expertise?*

Three consequences are implied should this association exist. First, the components of expertise should conform to theoretical constructs specified by EIPT; second, discrimination between experts and novices using EIPT constructs should be possible; and third, individuals' NVF expertise should be susceptible to enhancement as asserted by EIPT. The following paragraphs develop the propositions that follow from these expectations.

The composition of NVF expertise. EIPT holds that experts out-perform novices within their specialized domain because they can recognize immediately that which novices may miss or require great effort to discover: compliance of expertise-specific circumstances with an expert script (Glaser, 1984). Since non-compliance with an expert script (script failure) occurs because the lack of both ability and willingness prevents script "doing," and the lack of enabling resources prevents script "entry" (Leddo & Abelson, 1986), these elements are suggested as likely components of expertise. Accordingly, it might be expected that components of NVF expertise that affect script success (ability, willingness, enabling resources) should be revealed by individuals' recognition of cues that are expertise-specific (hereinafter referred to as *script cues*). The first of the three propositions therefore implied is:

> *1. NVF expertise should consist of three components of expertise represented by the constructs: (1) ability, (2) willingness, and (3) enabling resources.*

The classification of NVF expertise. Bull and Willard also assert that there is no typical entrepreneur (1993: 187). However, the possibility that underlying components of expertise exist raises the hope that finer distinctions among NVF experts and novices may be developed--possibly leading away from the notion of "typical entrepreneur" and toward the notion of "NVF expert." This dissertation asserts that entrepreneurship research has progressed to the point that the next logical step in the development of a key capability in the field is to be able to discriminate differences in

NVF experts and novices, using components of entrepreneurial expertise developed from script cue recognitions. Accordingly, the second proposition suggested is:

2. *Discrimination between NVF experts and novices using the script cue-based indicators of EIPT constructs should be possible.*

The creation of NVF expertise. EIPT also suggests the potential for creating enhanced entrepreneurial expertise. Specifically, EIPT proposes that the creation of "knowledge scaffolds" in novices (enhancing expertise) occurs when novices compare their scripts with those of experts in an in-depth contact setting (Glaser, 1984; Lord & Kernan, 1987; Norman, Gentner, & Stevens, 1976). Certain experiential learning methods qualify as in-depth contact (Collins & Stevens, 1982; Glaser, 1984; Lord & Kernan, 1987; Petranek, Corey, & Black, 1992), suggesting the third proposition:

3. *An expertise enhancement method that provides novices in-depth developmental contact with experts, should result in enhanced novice script cue recognitions that more closely approximate those of experts.*

The Research Model. A test of the expertise-based approach to NVF, and specifically of the three propositions (above) is required. To accomplish this, three successive (sub) studies are conducted as follows:

Sub-study 1: To examine the underlying structure of script cue recognition data to ascertain how constructs representing components of NVF expertise conform to the theoretical model;

Sub-study 2: To ascertain whether discrimination between NVF experts and novices is possible using the script cue-based indicators of EIPT constructs; and

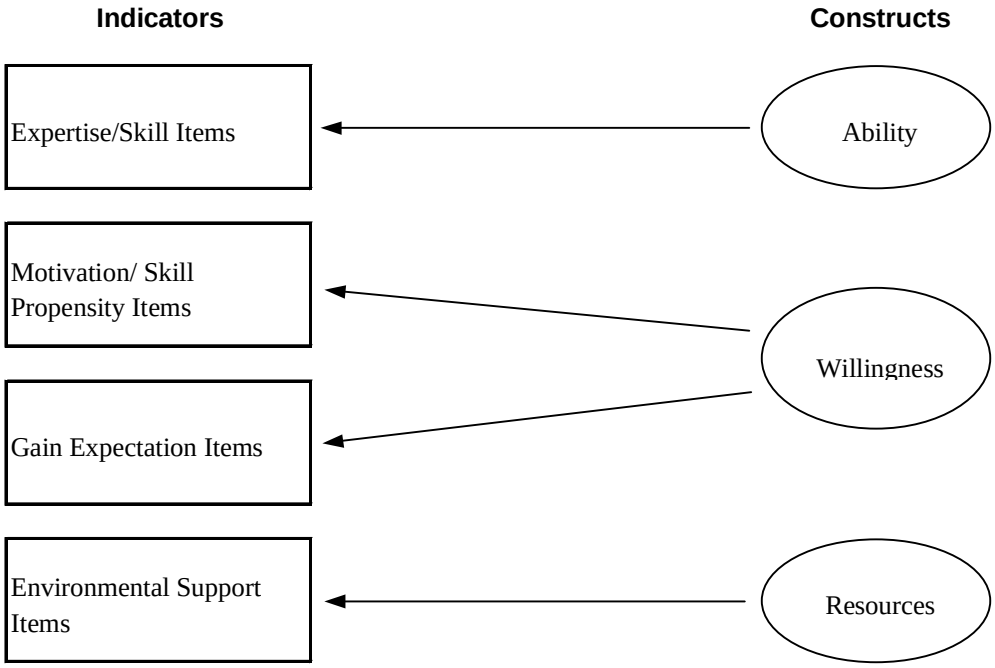
Sub-study 3: To ascertain whether the script cue recognitions of enhanced novices more closely approximate those of experts in an expertise enhancement experiment that provides to novices, in-depth developmental contact with experts.

Accordingly, the research model is sequential, with earlier results forming the foundation for later tests. Each stage of the research model is described in the paragraphs that follow.

In Study 1, the research model shown in Figure 4-2, is examined to ascertain whether individual responses to script cues fit the hypothesized structure.

FIGURE 4-2

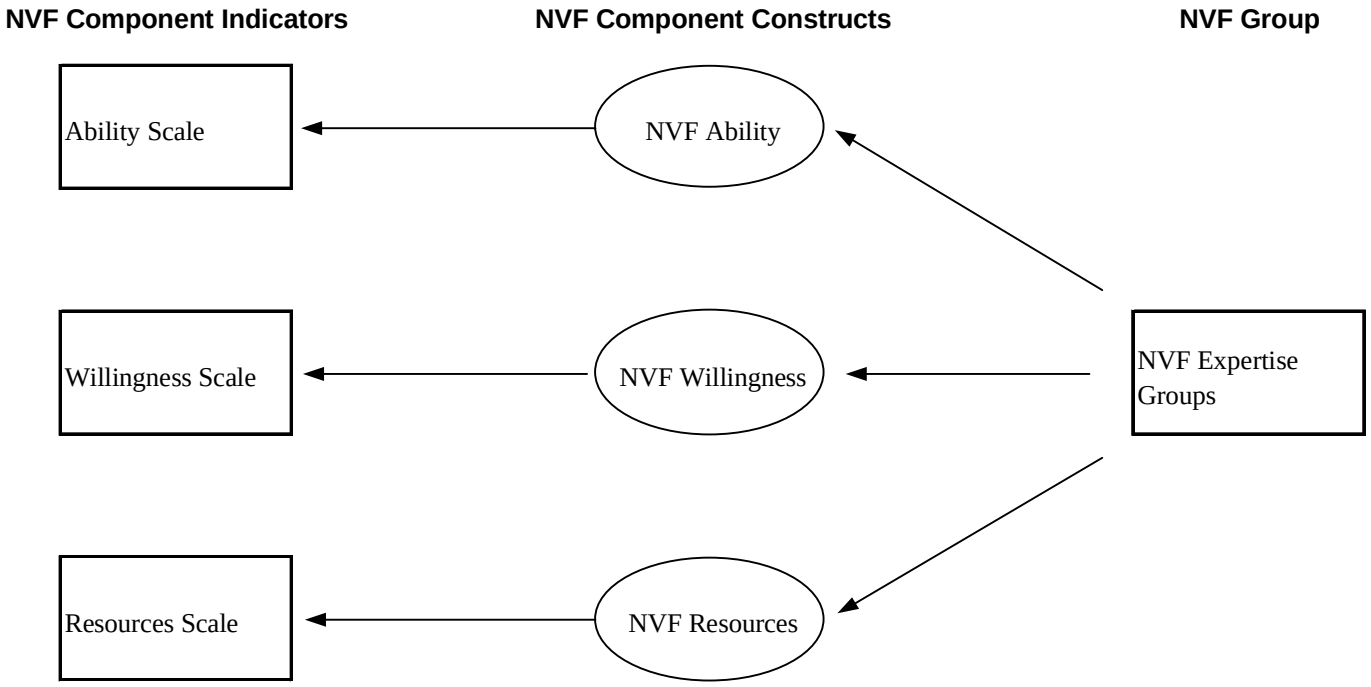
Research Model for Sub-study 1



In Study 2, support for Proposition 2 is ascertained through the testing of Hypothesis 1: Differences exist among the mean vectors of the indicators of NVF component constructs across expert and novice groups. In Study 3, support for Proposition 3 is ascertained through the testing of Hypothesis 2: Differences exist among the mean vectors of the indicators of NVF component constructs across expert, novice, and enhanced novice groups. The research model upon which Studies 2 and 3 are based is shown in Figure 4-3.

FIGURE 4-3

Research Model for Sub-studies 2 and 3



Methods. Table 4-3 summarizes data collection, measurement, and data analysis procedures for the three successive studies implied by the research model. The tests contemplated required a sample of experts, novices, and enhanced novices, who have responded to a set of NVF script cues in a questionnaire. With the help of the Utah Small Business Development Center and the Mountain West Venture Group, a sample was drawn, examined for threats to internal validity, and employed in the studies.

The sample consists of 224 anonymous questionnaire responses and demographic information. These responses come from 58 experts and from the following two groups of novices: (1) 135 respondents who lack contact with entrepreneurs or entrepreneurship, and (2) 31 randomly selected respondents who have received expertise enhancement course materials and experiences (Glaser, 1984; Petranek et al., 1992). Permission to analyze these data for this dissertation was obtained from the University of Utah Institutional Review Board (IRB). In the section that follows, the results obtained when the above method was applied to the sample are summarized.

TABLE 4-3
Summary of Research Method by Study

HEADING	SUB-STUDY 1	SUB-STUDY 2	SUB-STUDY 3
DATA COLLECTION	. SBDC Project sample . Cross-sectional questionnaire	. SBDC Project sample . Cross-sectional questionnaire	. SBDC project subsample with random assignment, and elimination of novices with NVF experience . Solomon 4-group experimental design
MEASUREMENT	. Script cue recognition items . Assignment of items to theoretical component constructs	. 2 categorical groups as dependent variable . Indicators of NVF component constructs as independent variable	. 3 categorical groups as dependent variable . Indicators of NVF component constructs as independent variables
DATA ANALYSIS	. Exploratory factor analysis . Chronbach's alpha . Confirmatory factor analysis (LISREL)	. Multiple discriminant analysis (MDA)	. t-tests . Multiple discriminant analysis (MDA)

Results. Chapter 4 of the dissertation describes the results obtained through the implementation of a methodology created to test a literature-based but previously untested research model. As previously described, the methodology consists of three successive studies intended to provide a multiple test of EIPT in the new venture setting to answer the research question: Is the occurrence of new venture formation associated with individual expertise?

Table 4-4 summarizes selected key findings of the three studies conducted under the research methodology, each of which provides evidence, within limitations, of an affirmative answer to the research question.

TABLE 4-4
Summary of Results by Study

HEADING	SUB-STUDY 1	SUB-STUDY 2	SUB-STUDY 3
DATA ANALYSIS	. Exploratory factor analysis: clear 3-factor structure . Confirmatory factor analysis: GFI = .862; AGFI = .838 . Scale reliability analysis: Alphas = .70, .58, .64	. MDA: Eigenvalue .7842 p <.0000 Equivalent F 37.6 p <.0000 Jackknifed Classification Percentage 83.8%	. MDA: Eigenvalues .6194 .2245 p < .0000 .0000 Equivalent F 22.9 p <.0000 Jackknifed Classification Percentage 73.4% . t tests for 3 scales: p < .035; .516; .000
PROPOSITION & HYPOTHESIS TESTS	. Proposition 1 holds. Components of NVF expertise are identified and measured.	. Proposition 2 holds. . Hypothesis 1 supported. Differences exist among the mean vectors of the indicators of NVF component constructs across expert and novice groups.	. Proposition 3 holds. . Hypothesis 2 supported. Differences exist among the mean vectors of the indicators of NVF component constructs across expert, novice and enhanced novice groups.
LIMITATIONS	. Strength of script cue recognition not captured. . Confirmatory factor analysis χ^2 high and significant. . Scale reliabilities moderate.	. A somewhat parochial sample suggests replication . Smaller n sufficient for exploratory study, but suggests further analysis	. Expensive research design given sample size. . No data gathered on the persistence of treatment effects.

Study 1 supplies evidence that the components of new venture formation expertise may be delineated using script cue recognition-based indicators of new venture formation constructs. Study 2 supplies evidence that script cue recognition-based indicators of NVF component constructs may be used to discriminate between NVF experts and novices. Study 3 supplies evidence that an expertise enhancement method that provides novices in-depth contact with experts enhances novice expertise such that their script cue recognitions more closely approximate those of experts.

When three "different" derivations from a theory are tested and confirmed, that theory is deemed to be substantially more credible (Stinchcombe, 1968). The theory proposed in this dissertation is that the occurrence of new venture formation by individuals is associated with expertise. The results reported here clearly support this assertion. The remainder of this abstract is devoted to briefly evaluating the implications of this finding, and to interpreting the import of the evidence gathered to support it.

Discussion and conclusions. The entrepreneurship literature consists of numerous studies that analyze the relationship of the entrepreneur to NVF according to economic, characteristics-based, and NVP criteria. Although a great deal has heretofore been learned, research is at a crossroads because consistent evidence regarding the underlying dynamics of the entrepreneur-NVF relationship has not yet been identified. Further, little research synthesizes key ideas in the field. This dissertation demonstrates that EIPT can explain and synthesize these underlying dynamics in a

way that contributes to the better understanding and management of the entrepreneur-NVF relationship.

In this dissertation, the multiple tests of theory conducted, show that the occurrence of NVF is associated with individual expertise. Although the premise that NVF expertise is an underlying dynamic in the entrepreneur-NVF relationship may seem to be intuitive, this notion has only recently been suggested (Bull & Willard, 1993), and, until this study, has neither been operationalized nor supported. Additionally, as noted previously, other research streams in the field of entrepreneurship have failed to provide this evidence. As a result, an application of the EIPT notion of expertise to the field of entrepreneurship synthesizes key elements of the economic, characteristics-based, and NVP research streams through the identification of key dynamics in the entrepreneur-NVF relationship with the following results:

1. The composition of NVF expertise is delineated on the basis of empirical findings.

In Study 1 a model that identifies the various components of NVF expertise as "underlying dynamics" of the entrepreneur-NVF relationship is developed. This model contributes to future research that addresses new questions such as those posed by Bull and Willard (1993), and extends previous work such as Herron (1990). Bull and Willard (1993) suggest investigations into how formal expertise (1) affects the recognition and pursuit of opportunities, and (2) accounts for the geographic clustering of new ventures (1993: 193). Herron (1990) has contributed a vital link between two characteristics of entrepreneurs and NVP. The identification of the expertise-based components of NVF constitutes a natural extension of Herron's work.

2. The classification of individuals into more finely discriminated categories between expert and novice is made much more practical.

For at least the past decade, scholars in the field have been advancing typologies that categorize entrepreneurs (Bird, 1989; Derr, 1984; Vesper, 1980; Wortman, 1987), often in a theory-building sense, unaccompanied by empirical testing. The integration of several key elements of the economic, characteristics-based, and NVP research streams into a classification model with significant discriminating power accomplished in Study 2, enables the making of finer-grained distinctions among experts, and between experts and novices, and thereby contributes an element of stability, perhaps even taking steps toward the standardization of entrepreneurship typologies. Also through this study, the empirical testing of existing typologies is made more practical. Furthermore, the model developed herein might well be used in future research to help to explain the relationships between NVF or NVP, and particular types of entrepreneurs. Finally, the testing of prospective new venturers using typologies developed in this research as a map for plotting expertise levels and generating feedback may help to prevent new venture failure, and encourage new venture formation.

3. The process of creating additional expertise in NVF novices has been better documented, better understood, and perhaps improved.

The results reported in Study 3 suggest improvements in creating new venture experts through training. Brockhaus and Horowitz (1986) maintain that " . . . one of the major concerns of those interested in the continued growth of new business is the issue of whether entrepreneurs are born, or whether they can be created through training" (1986, p. 37). This study documents a relationship between the in-depth contact-based training techniques advocated in EIPT and enhanced NVF expertise thereby providing answers to such questions.

Thus, in this dissertation, two heretofore-disparate fields, entrepreneurship theory and expert information processing theory (EIPT), have been combined to answer the research question: Is the occurrence of new venture formation associated with individual expertise? In a Schumpeterian sense, this has been a fitting undertaking, since this "new combination" (1) offers a new theoretical approach to a field in which theory development is presently a primary objective (Bull & Willard, 1993), (2) implies new methods for operationalizing the investigation of NVF, and (3) opens new opportunities for the enhancement of entrepreneurial capability.

This dissertation demonstrates that the suggestion that NVF is associated with individual expertise is not trivial. At the very early stages of development, the link between expertise and NVF promises to be very useful in helping entrepreneurship researchers illuminate the underlying dynamics of NVF so that the productive-destructive aspects of starting businesses can be better managed.

This dissertation offers a deeper understanding of the influence of individual entrepreneurs and their expertise, on NVF. Such an understanding is of critical importance at this point in time, because new ventures create jobs, foster innovation, and help keep the economy of a country competitive. Accordingly, the scholarly community, the business community, and society as a whole stand to benefit greatly, if "entrepreneurship as expertise" lives up to its potential as an integrating and explanatory notion.

In conclusion, it appears appropriate to state that this study achieves its objective: the research question is answered. Based upon the results of the research reported in this dissertation, the occurrence of new venture formation is found to be associated with individual expertise. It is hoped that this dissertation has also contributed some direction that may be useful at the present crossroads in entrepreneurship research. Although the steps taken are but a beginning, the possibilities for additional insight that portend are heartening.

Study 2: *The implications of multiple cultures and entrepreneurial expertise for international public policy*

In Study 2, the composition of new venture expertise (the expertise scales (figure 4-3) were held constant, and the classification capability of the model was tested in two countries in addition to the USA: Mexico and Russia, presented at the 1995 Babson Conference on Entrepreneurship and International Public Policy held at London Business School, and published in full in *Frontiers in Entrepreneurship Research, 1995*.

In this study, the expertise levels of expert v. novice entrepreneurs in Mexico and Russia were compared to those in the U.S. Pursuant to the dissertation research reported in the prior subsection, responses to a questionnaire designed to measure new venture formation expertise were analyzed using LISREL to construct the measurement (composition) model, and then multiple discriminant analysis was used to test for hypothesized differences across cultures and economies, and to develop the classification model. When the centroids (means) of the six groups were plotted as ordered pairs (coordinates) for each centroid, and the separation of groups is visualized using iso-density ellipses (circles), the plot showed that although the groups are appreciably overlapped, the means are significantly different for the LISREL-based new venture expertise components across groups, which provides both intuitive and counter-intuitive insights and implications for public policy. The key theory and hypotheses, statistical tests, results, and implication reported in the study are summarized in the paragraphs that follow.

Theory and hypotheses. The attempt to calibrate entrepreneurial capability across economies and cultures in a cross-sectional study requires two elements of simplification: (1) a construct that describes a common property among respondents regardless of culture, and (2) a readily observable and tractable means to distinguish among individuals hypothesized to possess different levels of this property.

The pervasiveness of knowledge structures (scripts) within the human family (Galambos, 1986; Glaser, 1984; Lurigio & Carroll, 1985; McKeithen et al., 1981) satisfies the first requirement. A primary assumption in this study is that entrepreneurs and non-entrepreneurs, no matter where they live, will possess a knowledge structure/script (or lack thereof) with respect to their field.

To satisfy the second requirement, a particular feature of entrepreneurial experience must be selected as the focus. In this regard, we take direction from Schumpeter (1934: 78) who classifies anyone who "carries out new combinations" as an entrepreneur. Thus, for purposes of this study we consider an individual who has formed a new venture to possess entrepreneurial expertise. We henceforth refer to this expertise as new venture formation expertise.

From the review of literature in the original paper[51], it should be clear that differences are to be expected between new venture formation experts and novices. What was not clear prior to conducting this research, were expectations regarding differences and similarities among experts and novices across countries. Both the economic circumstances and the cultural tradition and experience of a given country might be expected to generate differences in new venture formation expertise. To make this point, a very cursory sketch that parsimoniously outlines these differences follows (recognizing fully that the disciplines which specialize in these comparisons could do them much more justice that is accomplished here). These outlines draw the rudimentary boundaries needed to justify the expectations of country-based differences in new venture formation expertise.

Economic differences. On a 1995-based "scale of development," Russia, Mexico, and the U.S. are likely to place in ascending order if viewed according to the maturity of their respective market systems. Further, Russia is unique in economic terms because of its prior experience with approximately 70 years under a "command" or centralized economy. And, while Mexico has been part of the Western market system, it has nevertheless experienced its own unique economic circumstances that are related, in part at least, to its proximity to the U.S. and its virtually one-party system of government which at various times has unilaterally appropriated business assets.

The U.S., on the other hand, has experienced relative stability both economically and politically, its "revolution" being much more distant historically than those of Mexico or Russia. As a result the U.S. has a much more stable system of property rights, and a set of institutions that have produced an economy that is both robust and huge. These features will likely have an impact on new venture formation expertise.

Cultural differences. Differences also exist among the cultures of the three countries, and these are not unrelated to their economic circumstances. Stereotypically, the Americans are perceived as the "fat-cats" with all that this implies: rich in resources and in the economic power and insularity that such riches imply. The Mexicans possess a mixed cultural stereotype that is alternatively "siesta-based," for the less informed observer, but remains beset with a combination perception that is opportunistic yet bribery influenced. Russia—while undergoing economic turmoil—possess a strong cultural heritage, but one that has been traumatized by decades of

[51] Such a review is available in Chapter 1 of the monograph, and is not presented here to avoid unnecessary repetition.

unrelenting shortages and dependence upon political v. economic means to get ahead (Kornai, 1986; Kozyrev, 1992).

What do these descriptions imply in terms of a hypothesis? It seems possible, we suppose, to generate a large list of mainly descriptive expectations in hypothesis form. But given the present status of entrepreneurship research (Low & MacMillan, 1988) where the merely descriptive is "out" and the inferential is "in," and given this early juncture in the present research, it seems more productive to test a general inferential hypothesis. Accordingly, as a beginning point, we expect that:

> *Differences exist among the mean vectors of the indicators of new venture formation expertise across expert, novice, and country groups.*

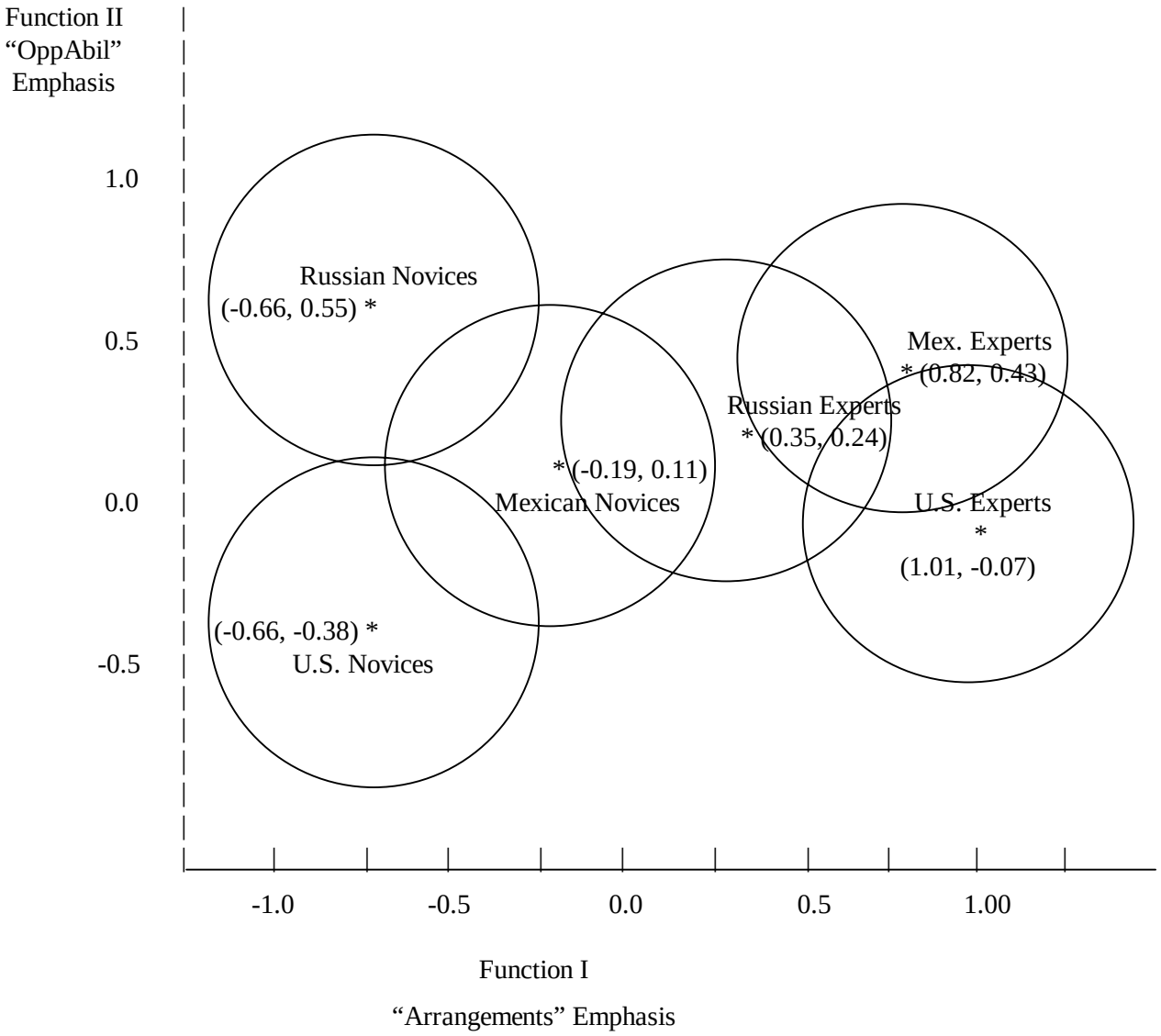
Methods. Data (n = 310) were gathered from 148 U.S. respondents, 76 respondents from Russia, and 86 respondents from Mexico. This purposeful sample (though the data are not strictly random, there is no reason to suppose that a random sample would yield different results) is composed of two parts: practicing entrepreneurs (experts), and non-entrepreneurs (novices). Respondents were classified as practicing entrepreneurs if they had either started a business that has been in existence over two years, or started three or more businesses at least one of which is successful—a very "grass-roots" approach to the identification of individuals with likely "new venture formation expertise."

The three scales identified in the (composition) measurement model developed from the U.S. data as a baseline, were used to measure the expertise of individuals. Multiple discriminant analysis was used to test the hypothesis. A hypothesis of this form is confirmed where: (1) a test of the equality of group mean vectors using an approximate F-test based upon Wilks' lambda is significant, (2) the eigenvalues of the discriminant functions are significant using an approximate chi-square statistic, and when (3) the classification of cases into groups by the discriminant functions in a jackknife analysis (Lachenbruch, 1967) is relatively more effective than estimating group membership using the prior probabilities of group membership contained in the sample.

Results. As more fully described in the published article, the classificatory hypothesis was confirmed. The test of the equality of group mean vectors using an approximate F-test based upon Wilks' lambda was significant ($p < .0000$), the eigenvalues of the discriminant function were significant using an approximate chi square statistic ($p < .0000$ and .0027 respectively), and the jackknifed classification of cases into groups by the discriminant function develop in the analysis improves the probability of correctly estimating group membership as compared to using the prior probabilities of group membership contained in the sample.

An interpretation of the two discriminant functions is possible when the loadings, each in excess of .95 for both variables, are examined. The means plotted in Figure 4-4 show that on discriminant function I, the novice group has the lowest combined score, the expert group the highest, and the score of the enhanced (treatment) group is about half-way between experts and novices. With a rotated loading of 0.967, discriminant function I (shown on the horizontal axis of Figure 4-4) appears to be emphasizing the "doing" dimension of entrepreneurship; i.e., the actual creation of a new venture. Groups located at higher positions on this function tend to expose themselves to information differently, create and sustain competitive advantage, and seek higher control. The expert group appears to be much farther along in the venturing life cycle in that they have experienced failure episodes in their venturing pasts, have built support and resource networks, and have had frequent contact with other entrepreneurs. All of these characteristics are reflected in the items of the Doing scale.

FIGURE 4-4
Discriminant Function All Group Scatter Plot:
20 Percent Isodensity Circles



* indicates a group centroid

Discriminant function II is notable for the separation of the enhanced novice group on the high side of the vertical axis. The high rotated discriminant loading (0.967) of discriminant function II stresses the "entry" dimension of entrepreneurship; i.e., the willingness to embark upon a new venture. Groups located at higher positions on this function tend to have a low need for support and conformity, and reveal qualities of assertiveness, initiative, risk taking, and a high tolerance for ambiguity.

The classification functions derived by multiple discriminant analysis were computed using the post-test results of the 310 participants in the study, and the observations were classified as belonging to the group having the highest estimated posterior probability. A jackknife analysis (Lachenbruch, 1967) was used to successively withdraw each observation from the predictor function for classification, while permitting the remaining observations to contribute to the computation of the discriminant function. The classification matrix giving the number of subjects classified into the different groups compared to their actual groups, using proportionate prior probabilities (Eisenbeis & Avery, 1972), and the percentages classified correctly are reported in Table 4-5.

TABLE 4-5
Jackknifed Classification Matrix

			Cases classified into group :					
Actual Group	**Prior Prob.**	**Correct %**	**USE**	**USN**	**RsE**	**RsN**	**MxE**	**MxN**
USExp	0.174	59.3	32	9	9	0	0	4
USNov	0.303	77.7	9	73	3	0	0	9
RsExp	0.178	12.7	17	21	7	0	0	10
RsNov	0.068	9.5	0	10	1	2	0	8
MxExp	0.058	0.0	6	2	7	0	0	3
MxNov	0.219	14.7	10	35	12	1	0	10
Total	1.000	40.0	74	150	39	3	0	44

The total correct classifications were found to be 59.3, 12.7 and 0.0 percent for the expert groups, respectively, and 77.7, 9.5, and 14.7 percent respectively for the three novice groups. The two discriminant functions substantially increase classification capability for the U.S. experts, and U.S. and Russian novices since, based on the proportion of each group in the sample, it would be expected that lower percentages of the participants would be classified correctly. The lower classification percentages for the Russian and Mexican experts and the Mexican novices show that these discriminant function scores fall somewhere between "high" and "low" readiness to venture on discriminant function I (which explains approximately 80 percent of the variance among groups).

It is also useful to note that when the centroids (means) of the six groups were plotted as ordered pairs (coordinates) for each centroid, and the separation of groups is visualized using isodensity ellipses (circles), the plot (Figure 4-4) shows that although the groups are appreciably overlapped, the means are significantly different for these new venture expertise components across groups. Isodensity ellipses (circles) that are expected to contain 20 percent of the subjects in each group were plotted with a diameter of each circle computed to be 1.34 units (Watson, 1982). The isodensity circles in Figure 4-4 depict the overlaps among the groups.

U.S. experts are shown to have the highest readiness to venture as measured by the "Arrangements" scale. Russian novices are highest on the "Opportunity-Ability" scale, followed closely by the Mexican entrepreneurs, indicating a high acuity in these two groups for recognizing and protecting economic opportunities. Mexican experts have the highest "Willingness" to venture. U.S. novices are lowest on both "Arrangements" and "Opportunity-Ability" with U.S. experts joining

the novices as the next lowest group on opportunity recognition ability. Russian experts and novices are lowest on the "Willingness" scale.

Discussion and conclusion. Due to the continuing interest in global entrepreneurship, the implications of this study published over half a decade ago take on increased importance. This study set out to answer the research question: Do cross-cultural differences in expertise among the entrepreneurs and non-entrepreneurs of various countries have implications for public policy? In this study, two sub-questions are thus addressed: (1) What are the cross-cultural differences in expertise among entrepreneurs from Mexico, Russia, and the U.S.? and (2) What impact do such differences have on the framing of Western public policy toward emerging economies?

By quantifying differences among the six groups on three expertise scales, it has become possible to "calibrate" the levels of new venture formation expertise in existence in Russia and Mexico (respectively) relative to US entrepreneurs. In this respect, policy makers might able to move a step closer to making decisions based upon empirical evidence v. on the basis of stereotypes or anecdotal evidence. Certainly preliminary answers at least, to sub-question 1 are possible.

Answers to sub-question 2 are not as easily forthcoming. Given the importance of two key topics: (1) the continuing drama in Russia relating to "marketization" of its economy, and (2) the implementation of NAFTA, a timely opportunity for the comparison new venture formation expertise within and across Mexican, Russian, and US cultures presents itself. What has been learned that might inform these questions?

First, we see some intuitive conclusions confirmed. For example, it might be expected that US entrepreneurs would be highest on scales that measure the level of venturing arrangements (money, contacts, technology access etc.). It might also be expected that the stereotypical notion of the Mexican entrepreneur as highly capable in opportunity seeking and recognition, would be confirmed in the data. However, it was <u>not</u> intuitive to the authors, that Russian novices would be <u>highest</u> in opportunity ability, nor was it intuitive that the US group (both experts and novices) would be lowest on the opportunity recognition scales, and that the Russian group (both experts and novices) would be lowest on the willingness scales.

Second, we see a beginning for mapping the path toward the enhancement of new venture formation expertise in all three countries, if low mean vector scores are assumed to be pointers to needed improvements. Recent research suggests that new venture formation and entrepreneurial expertise are linked (Mitchell & Chesteen, 1995). Therefore, given the documentation of cross-cultural differences in new venture formation expertise, the path to more efficient new venture formation is made clearer, with the resulting added value to the economies in question.

Third, we see the possibility that a better model of cross-cultural entrepreneurial expertise, and a means for the measurement and comparison of new venture formation expertise within and across cultures, will be able to assist practitioners (e.g. funding agencies, other entrepreneurs, policy makers, etc.) to forge or facilitate more informed multi-cultural venture linkages.

But, at the time, these were preliminary interpretations of the analysis. Additional thought and study has been necessary, some of it has been conducted and is reported as this subsection progresses, and further studies are underway at this writing. Next reported is a qualitative analysis of the relationship between entrepreneurship and cognitive scripts.

Study 3: *Oral history and expert scripts: Demystifying the entrepreneurial experience*

In Study 3, the underlying concept that cognitive scripts are related to new venture formation was evaluated in the US setting (published) and in the Mexican setting (as yet unpublished) was evaluated using qualitative methods. It was in this study that in-depth qualitative evidence was found for commonality in expert script norms within a group of entrepreneurs, as was foreshadowed in the earlier quantitative studies (Studies 1 and 2), and which formed the basis for the assertion that there may, in fact, be a global culture of entrepreneurship (Mitchell et al., 2000). In the following paragraphs the published study (Mitchell, 1996) is reviewed and summarized.

In the spring of 1993, twenty-three practicing entrepreneurs were interviewed in-depth regarding the history of their entrepreneurial career. With the permission of each informant these orally recounted histories were tape recorded and transcribed, resulting in approximately 520 single-spaced pages of text. These histories cover a broad range of topics including in particular, the topics of success and failure that are the focus of this study.

In the analysis, the goal was to identify common themes within the interviews that could be used (because of their consistency- or consensus-based credibility) to illuminate the "text" or content of the entrepreneurial expert script. Thus, in addition to the identification and grouping of informant statements that contained the words "success," "failure," or their derivatives, additional analyses were performed which grouped informant statements into those that might reveal definitional aspects of the script in addition to normative prescriptions or suggestions. Finally, as suggested above, the analysis of the sub-text of failure-related data was also performed.

The analysis demonstrated that the history of the entrepreneur informants cited herein differs little in substance within the group, and is likely to vary little in key respects within the population of venturers in general. In the case of entrepreneurial success scripts, the expected sequence of events seems to be "understood" by informants. The commonly understood sequence appears to be quite simple: e.g. "start the business, and skillfully manage a multiplicity of demands according to the norms until it is a success." In the analysis, success script definitions in the data coalesce around two sets of contrasting norms surrounding material v. non-material success. One group of informants directly relates success to material, visible, or commonly accepted factors such as profits, control of destiny, or prestige and recognition, while another group of informants relates their success to considerations that do not fit the money-recognition stereotype. In these statements, non-financial standards seem to surface, which expands the breadth of the success definition.

When the oral histories are examined for failure norms, twenty-two of the twenty-three informants cite instances of failure sometime in their career. Only one informant had <u>not</u> experienced failure "... in any business I have tried." The rest take a variety of stances toward failure. Some recognize it. Some reject it. Others wrestle with it. Still others remove it. A few reconcile themselves to it.

Thus, whether pertaining to success or failure cognitive script norms, the foregoing study suggests that there is commonality in terminology, knowledge bases, and in the cognitions of entrepreneurs themselves. In a preliminary and exploratory way, this study supports the later-developed notion that transaction "success scripts"—such as planning, promise, and competition scripts—and "failure scripts"—such as fatalism, refusal, and dependency scripts—do, in fact, figure prominently in high performance economic behavior as it has been defined within this monograph. Further, these results have been confirmed in other qualitative work (in press at time of writing) (Gurnell, 2000; Mitchell et al., 2001; Mitchell & Morse, 2001). The results of Study 3 set the stage for a review of Study 4, which was conducted to investigate quantitatively, and at a much more

detailed level than had previously been attempted, the extent of commonality and differences in global entrepreneurial cognitions.

Study 4: *Cultural values and venture cognitions on the Pacific Rim*

This study investigates the venture cognitions among entrepreneurs in seven Pacific Rim countries, to investigate the manner in which cultural values and arrangements, willingness and opportunity-ability venturing scripts are reflected in the expertise/schema-based cognitions that have been shown to affect entrepreneurial intentions. The sample consists of responses from 371 entrepreneurs in Australia, Canada, Chile, the People's Republic of China, Japan, Mexico, and the United States. The results of this study show that cultural values have profound and very specific effects on venture cognitions highlighting within-group differences among entrepreneurs, while confirming the common cognitive structure of their cognitions[52].

Theory and hypotheses. The theoretical expectations that produce the hypotheses in this study are grounded in culture and cognition theory. Hofstede (1980) argues that cultural values lead to societal norms, which in turn lead to particular organizational and intellectual structures (Hofstede, 1980: 373). Busenitz and Lau (1996) suggest the existence of direct causal relationship between cultural values and cognitions. Hofstede further argues that the stability of culture is based upon the systems of constant reinforcement that exist within societies.

Cultural values. Hofstede (1980) found that cultural differences across societies could be reduced to four quantifiable dimensions: power distance, individualism, uncertainty avoidance, and masculinity[53]. However, Hofstede & Bond (1988) raise question the completeness of the dimensions for Asian respondents, suggesting an additional dimension termed "Confucian Dynamism," which Hofstede later termed "time orientation" (Hofstede, 1991). Power distance refers to the acceptance of inequality in power and authority between individuals in a society. Individualism represents a preference for acting in the interest of the self and immediate family, as opposed to collectivism, which represents an individual's acting in the interest of the group in exchange for their loyalty and support. Uncertainty avoidance captures individual discomfort with unstructured or ambiguous situations—the preference for certainty. The Masculinity[49] variable represents a belief in and emphasis on materialism and decisiveness rather than in/on service and intuition (Hofstede, 1980). The Time Orientation Variable emphasizes persistence, thrift, a sense of shame, and or ordering relationships by status—and observing that order; and it underemphasizes personal stability, protecting "face," reciprocal favors/gifts, and respect for tradition. Hofstede quantifies the variations in these values systematically by country (Hofstede, 1980; Hofstede & Bond, 1988).

It was beyond the scope of this study to elaborate and test a model that included all of the factors suggested by cultural theory to affect cognitions and reinforce culture (factors such as: education, early life experience in families and schools, political and economic realities, and socialization in organizations and institutions). In this article the possibility is suggested, that the situation-specific nature of venturing may have its own norms/cognitions—a global culture of entrepreneurship which, rather than being created within a given country, has been created

[52] In a later study, this common cognitive structure was more thoroughly investigated and confirmed (Mitchell et al., 2000).

[53] McGrath et al., 1992, have suggested that masculinity might be better conceptualized as "materialism." Other authors have suggested that this dimension captures "Recognition Motivation" (Mitchell et al., 1998). We use the materialism idea herein.

(paraphrasing Kluckhohn, 1961) by the limited number of common problems that venturers face, along with a limited number of known responses.

Venture cognitions. As suggested in Study 1, entrepreneurship theory has been expanded to include the idea that cognitive scripts (individual expertise) are (is) associated with new venture formation. A summary of relevant literature sets the stage for the multiple hypotheses developed and reported in this study (Morse et al., 1999).

Arrangements Cognitions. In the formation of successful ventures, factors in the social environment affect cognition and influence results. Specifically, the cognitive construct of self-efficacy, derived from social cognitive theory (Bandura, 1986), is thought to play a primary role in relating individual judgments about a person's situation to consequences such as goal level and persistence, and ultimately to performance (Gist & Mitchell, 1992). Thus, cognitions surrounding the sufficiency of venture arrangements are thought to play a primary role in venture outcomes.

Arrangement Cognitions denote having the contacts, relationships, resources, and assets necessary to form a new venture. Without arrangements, "entry" into the cognitive process is precluded (Leddo & Abelson, 1986: 121). At least four types of Arrangement Cognitions that affect cognition are evident in the entrepreneurship literature: (1) Idea Protection (Porter, 1985; Rumelt, 1987), having (2) Actual Venture Resources, or having (3) Access to Resources (Bull & Willard, 1993; Vesper, 1996), and (4) Venture Specific Skills (Cooper & Dunkelberg, 1987; Herron & Robinson, 1993). Idea Protection is accomplished with patents, copyright, franchise agreements, contracts, and other isolating arrangements that serve to prevent imitation (Rumelt, 1987) thus signaling to a prospective venturer that resources from the environment are available with some degree of certainty to support venture formation. Of course, preceding the need to protect intellectual and physical resources is the actual possession or access to resources. Thus, the extent to which a prospective venturer controls or has access to financial and human capital, and other business assets and resources is also a necessary precondition for new venture formation (Vesper, 1996). Finally, Venture Specific Skills—the capability to effectively deploy the resources and make the most of protected ideas—serve to encourage the successful formation of a venture. These four types of arrangements are needed for, or are advantageous to, successful new venture formation (Vesper, 1996).

There is growing recognition in the entrepreneurship literature that it is not merely arrangements surrounding the venturer that are central to new venture success but that there are characteristics of the venture itself that are systematically linked to the formation of successful ventures (Cooper, 1993). As noted in the preceding paragraph, having an idea that is protected from competition, a network of people and contacts that can aid or participate in the business, sufficient financial and other general business resources, and proprietary assets or capabilities that provide sustainable competitive advantage are all critical arrangements that have been individually linked to venture success. Thus, successful venturers are expected to recognize the importance of these arrangements and be particularly sensitized to their own shortcomings in these areas. This is because the assessment of personal and situational resource constraints is understood to affect an individual's self-efficacy (Gist & Mitchell, 1992), which has been shown to be crucial for new venture formation (Krueger, 1993; Krueger & Dickson, 1993; Mitchell et al., 1998; Mitchell & Seawright, 1995).

Willingness Cognitions. Willingness Cognitions consist of thoughts relating to commitment to venturing, and receptivity to the idea of starting a venture. Successful venture formation requires Willingness Cognitions, which include: (1) an opportunity Seeking Focus (Krueger & Dickson,

1993; Krueger & Brazeal, 1994), (2) Commitment Tolerance (Ghemawat, 1991), and (3) Motivation to pursue venture opportunities (McClelland, 1968; Sexton & Bowman-Upton, 1985; Stevenson et al., 1994). A Seeking Focus is an openness, orientation, and drive to seek out new situations and possibilities and to try new things. Commitment Tolerance is a willingness to "put your money where your mouth is" and assume the risk and responsibility of new venture creation. Opportunity Motivation is an attitude concerned with "getting on with the task" and the belief that missing an opportunity is worse than trying and failing.

Willingness dimensions such as the foregoing are thought to be necessary cognitive conditions for successful new venture formation (Busenitz & Lau, 1996). Entrepreneurs need to be comfortable in new and uncertain situations, be prone to action, and be willing to demonstrate their commitment by investing time, money, and other resources in the venture. Successful venturers are expected to recognize the importance of these attributes (Mitchell, 1994a; Mitchell et al., 1998) and to attribute them to their own situation (Gist & Mitchell, 1992) to a greater extent than will others, who may not appreciate the level of cognitive commitment needed to utilize venturing abilities (Krueger & Carsrud, 1993; Mitchell et al., 1998).

Ability Cognitions. Ability Cognitions reflect the possession of and capability to masterfully deploy the skills, knowledge, norms and attitudes required to be successful in new venture development (Vesper, 1996). At least four cognitive dimensions of Venturing Ability appear in the entrepreneurship literature: (1) Venture Experience, (2) Venturing Diagnostic Ability, (3) Venture Situational Knowledge, and (4) Opportunity Recognition capability. Venture Experience is the extent to which an individual has been directly involved in the start-up and running of a new venture (Stuart & Abetti, 1990; Vesper, 1980). Venturing Diagnostic Ability is the ability to assess the condition and potential of ventures and understand the systematic elements involved in new venture creation (Bird, 1988; Boyd & Vozikis, 1994; Krueger & Carsrud, 1993). Venture Situational Knowledge is the ability to draw on lessons learned in a variety of ventures and apply those lessons to a specific situation (Vesper, 1996). Finally, Opportunity Recognition capability is the ability to see ways in which both customer and venture value can be created in new combinations of people, materials, or products (Glade, 1967; Kirzner, 1982).

These experiences, knowledge and abilities are thought to be necessary conditions for successful venture creation, because common pitfalls can be avoided when they are effectively utilized (Vesper, 1996). Previous venture experience is critical both from a learning perspective and a credibility perspective when it comes to venture financing and the establishment of stakeholder relationships. Successful venturers also need to be able to assess the potential of the business, apply situational norms, and recognize opportunity to fully understand what is required for successful venture start-up. Through the assessment of personal constraints, the analysis of task requirements, and the attributional analysis of experiences (Gist & Mitchell, 1992: 189, 203) these venturers are expected to recognize that these abilities are required for successful venture creation, and indicate the capability to use them. On the other hand, individuals who have not ventured, or who have ventured but not succeeded, may have a general idea of what is required but are not expected to have specific knowledge or the skill to use critical venture creation abilities.

Hypotheses. Hence, with definition of the Hofstede (1980) Cultural Values with respect to each country, and the variables that dimensionalize the arrangements, willingness, and ability attributes of expertise (developed in Chapter 3, Section 3-3), the relationship between cultural values and the schemas of venturers may be mapped. Table 4-6 provides the logic used in the study for

each of 39 hypothesized relationships between Hofstede's five Cultural Values and the ten expertise (venturer schema/Cognition) variables that we have previously discussed.

Tables 4-7 and 4-8 summarize the hypothesized direction and testing of the relationships among variables. Based upon the foregoing research and logical development, it is expected that:

Hypothesis $H_{1\text{-}39}$: Each Cultural Value will be related to the variables representing the Venture Cognitions of individuals in the manner shown in Table 4-7.

TABLE 4-6

Rationale for Hypothesized Relationships

Variable	Power Distance	Individualism	Uncertainty Avoidance	Materialism (Masculinity)	Time Orientation
AR1 Protectable Idea	Collusion/scarcity is a basis for power. Thus, PD suggests PI.	Collective societies limit private property and the protection of individual ideas. Thus, I implies PI.	Protectable ideas are a condition necessary for UA's to venture. Thus, UA suggests PI.	N/A	Low TO means respect for tradition and stability. Thus, low TO suggests high PI.
AR2 Resource Access	In high PD countries "who you know" counts. Thus, high PD implies low RA for the society as a whole.	Individualistic cultures support private access to resources. Thus, high I suggests high RA.	N/A	Those scanning for wealth are more aware of resource sources. Thus, M suggests RA.	Thrift suggest access to required resources through savings. High TO suggests high RA.
AR3 Resource Possession	Those with power have resources. Thus, high PD suggests low RP for the society as a whole.	Collective societies limit the possession of venturing resources by individuals. Thus, I suggests RP.	N/A	Those who are materialistic should possess resources which they are trying to increase. Thus, M suggests RP.	N/A
AR4 Venture Specific Skills	The distribution of available resources will be limited in high power distance societies. Thus, PD suggests low VSS.	Due to bureaucratic pressures, collectives should have fewer venture specific resources. Thus, high I suggests high VSS.	Societies with uncertainty avoidance are likely to discourage venturing, and thence the acquisition of venturing skill. Thus, high UA suggests low VSS.	N/A	High TO suggests high VSS through belief in an entrepreneurial posture.
W1 "Seeking" Focus	N/A	N/A	Those with high UA are not expected to "seek." Thus, high UA suggests low SF.	People who want rewards should be actively scanning for ways to obtain them. Thus, high M suggests high SF.	People with high persistence will have a high seeking focus. High TO suggests high SF.
W2 Commitment Tolerance	N/A	In collective societies, people will be unwilling to make individual commitments. Thus, high I suggests high CT.	Uncertainty avoiders tend to avoid making commitments also. Thus, high UA suggests low CT.	Those who want rewards tend to be willing to make commitments. Thus, high M suggests high CT.	High persistence implies commitment tolerance. High TO suggests high CT.
W3 Opportunity Motivation	Those socialized to power tend to engage opportunities. Thus, high PD suggests high OM.	N/A	Because opportunity suggests uncertainty, high UA suggests low OM.	Those who want rewards tend to act on opportunity. Thus, high M suggests high OM.	"Face" and personal steadiness/stability will have low OM. Thus low TO suggests low OM.
A1 Venture Experience	Because hierarchy may limit the entree to experiences in ventures, high PD suggests low VE.	We expect people in low "I" societies to have group v. separate venture experience. High I thus suggests high VE.	People who avoid uncertainty are unlikely to have venture experience. Thus high UA suggests low VE.	N/A	N/A
A2 Venture Diagnostics	Because hierarchy may limit experiences in ventures, high PD suggests low ability in Venture Diagnosis.	Where all economic activity is collective, ventures and their diagnosis may be moot. High I suggests high Venture Diagnosis Ability.	Uncertainty avoiders should systematically lack the knowledge needed to diagnose ventures. Hence, high UA suggests low VDA.	N/A	High TO: persistence and sense of shame for "missing something" if a deal fails should motivate high VDA.
A3 Situational Knowledge	N/A	People in low "I" societies should know few stories of individual ventures thus having limited situational knowledge. High I thus suggests high SK.	The presence of uncertainty avoidance in venture situations should be minimal. High UA therefore suggests low SK.	N/A	Low TO should lead to low SK, and those with a high entrepreneurial posture would likely have higher SK.
A4 Opportunity Recognition	N/A	Not good to say "I" have an idea; s/b a group success scenario. Low I suggests low OR.	For UA's, things that are risky will not be seen as opportunities. High UA suggests low OR	N/A	Those in tune with social contacts (high TO) will be higher OR than those who are tradition bound.

TABLE 4-7:

Direction of Hypothesized Relationships

Variable	Power Distance	Individualism	Uncertainty Avoidance	Materialism (Masculinity)	Time Orientation
AR1 Protectable Idea	$H1_1$: +	$H1_8$: +	$H1_{17}$: -	N/A	$H1_{31}$: -
AR2 Resource Access	$H1_2$: -	$H1_9$: +	N/A	$H1_{26}$: +	$H1_{32}$: +
AR3 Resource Possession	$H1_3$: -	$H1_{10}$: +	N/A	$H1_{27}$: +	N/A
AR4 Venture Specific Skills	$H1_4$: -	$H1_{11}$: +	$H1_{18}$: -	N/A	$H1_{33}$: +
W1 "Seeking" Focus	N/A	N/A	$H1_{19}$: -	$H1_{28}$: +	$H1_{34}$: +
W2 Commitment Tolerance	N/A	$H1_{12}$: +	$H1_{20}$: -	$H1_{29}$: +	$H1_{35}$: +
W3 Opportunity Motivation	$H1_5$: +	N/A	$H1_{21}$: -	$H1_{30}$: +	$H1_{36}$: +
A1 Venture Experience	$H1_6$: -	$H1_{13}$: +	$H1_{22}$: -	N/A	N/A
A2 Venture Diagnostics	$H1_7$: -	$H1_{14}$: +	$H1_{23}$: -	N/A	$H1_{37}$: +
A3 Situational Knowledge	N/A	$H1_{15}$: +	$H1_{24}$: -	N/A	$H1_{38}$: +
A4 Opportunity Recognition	N/A	$H1_{16}$: +	$H1_{25}$: -	N/A	$H1_{39}$: +

TABLE 4-8:
Study 4 Findings

Variable	Power Distance	Individualism	Uncertainty Avoidance	Materialism (Masculinity)	Time Orientation
AR1 Protectable Idea	*$H1_1$:* + Strong Support	*$H1_8$:* + **Contrary Finding**	*$H1_{17}$:* - **Contrary Finding**	N/A	*$H1_{31}$:* - **Contrary Finding**
AR2 Resource Access	*H12:* - **Strong Support**	*$H1_9$:* + **Strong Support**	N/A	*$H1_{26}$:* + **No Support**	*$H1_{32}$:* + **Contrary Finding**
AR3 Resource Possession	*$H1_3$:* - **Strong Support**	*$H1_{10}$:* + **Support**	N/A	*$H1_{27}$:* + **No Support**	N/A
AR4 Venture Specific Skills	*$H1_4$:* + **Contrary Finding**	*$H1_{11}$:* + **Contrary Finding**	*$H1_{18}$:* - **Contrary Finding**	N/A	*$H1_{33}$:* + **Strong Support**
W1 "Seeking" Focus	N/A	N/A	*$H1_{19}$:* - **No Support**	*$H1_{28}$:* + **No Support**	*$H1_{34}$:* + **No Support**
W2 Commitment Tolerance	N/A	*$H1_{12}$:* + **Strong Support**	*$H1_{20}$:* - **Strong Support**	*$H1_{29}$:* + **No Support**	*$H1_{35}$:* + **Contrary Finding**
W3 Opportunity Motivation	*$H1_5$:* + **Support**	N/A	*$H1_{21}$:* - **Contrary Finding**	*$H1_{30}$:* + **No Support**	*$H1_{36}$:* + **No Support**
A1 Venture Experience	*$H1_6$:* - **Strong Support**	*$H1_{13}$:* + **No Support**	*$H1_{22}$:* - **Support**	N/A	N/A
A2 Venture Diagnostics	*$H1_7$:* - **No Support**	*$H1_{14}$:* + **Contrary Finding**	*$H1_{23}$:* - **Contrary Finding**	N/A	*$H1_{37}$:* + **Strong Support**
A3 Situational Knowledge	N/A	*$H1_{15}$:* + **Strong Support**	*$H1_{24}$:* - **Strong Support**	N/A	*$H1_{38}$:* + **Contrary Finding**
A4 Opportunity Recognition	N/A	*$H1_{16}$:* + **No Support**	*$H1_{25}$:* - **Contrary Finding**	N/A	*$H1_{39}$:* + **Support**

Methods. The methods in this study may be described under the standard headings for quantitative analysis: data collection, measurement, and data analysis.

Data collection. To test the hypotheses data were collected from a purposeful sample of 863 respondents in the U.S., Mexico, Canada, Australia, Chile, Japan and China, all of whom had business training or experience and 371 of whom were entrepreneurs with enough experience to suggest that they would be likely to possess venture formation expertise. Venture formation "experts" had either started a venture that was at least two years old, had started at least three businesses, one of which they deemed to be successful, or had extensive experience with venture start-ups as advisors or venture capitalists. All respondents completed a structured survey instrument that was translated into their native language.

Care was taken to translate the instrument in a fashion meaningful to each culture. A native of each country, who spoke English as a second language, was selected to translate the instrument from English into the native language. Each question was talked through with the native to develop a shared understanding of the question. After the survey was translated, a native English speaker, who spoke the foreign language, translated the instrument back into English. Where discrepancies arose both translators and one of the researchers would meet to reconcile the differences. However, even with the care taken to translate the survey instrument, it is still limited by the fact that it was generated by North American researchers based upon research theory from predominantly Western Journals (Hofstede, 1994).

To improve the representation of the convenience sample, an effort was made to collect data from at least two regions in each country. For example, data were collected from entrepreneurs and nonentrepreneurs in both Eastern and Western Australia. Business contacts in each of the countries were made and surveys were personally delivered and retrieved, assuring an almost 100% response rate (a small number of the surveys were refused). Within each country an attempt was made to create matched samples to limit the potential number of confounding variables. "Matching samples means that the respondents should be people who are as similar as possible in all aspects of their lives except for their nationality" (Hofstede & Bond, 1988: 9). An attempt was made to match the samples in terms of business experience, age, sex, and education.

Of the 371 qualified respondents, 132 are from North America (67 from the United States, 65 from Canada), 126 are from Central and South America (103 from Mexico, 23 from Chile), 83 are from Asia (52 from China and 31 from Japan) and 30 are from Australia. Despite some differences among the country sub-samples, demographic profiles (Morse et al., 1999) suggest that the samples are quite closely matched, as Hofstede and Bond (1988) recommend. Consequently, the sample was considered sufficient to test hypothesized relationships in at least an exploratory fashion.

Actually, the sample actually provides a conservative test of the hypotheses. Sampled novices, through their business education or experience, are more likely than other novices to recognize cues associated with successful new venture formation. In addition, and as summarized earlier, the threshold utilized for "venture formation expert" may actually be lower than the level utilized elsewhere.

Measurement. The dependent construct of the model, Venture Cognitions, is measured using Arrangement, Willingness, and Ability Cognitions variables, which were measured using the sum of paired script cue items (Mitchell, 1994a; Nunnally, 1978) (please see Morse, et. al., 1999, for means, standard deviations and correlations). These items (Mitchell, 1994a) use paired script recognition and distracter cues consistent with an accepted script-scenario construction model (Read, 1987).

Appropriate script and distracter cue items were derived from a review of the entrepreneurship and expert theory literature and from interviews with practicing entrepreneurs and non-entrepreneurs in the United States and are thus grounded in both the theoretical and substantive domain (Riordan & Williamson, 1985)[54]. For each conceptualized dimension of Arrangement, Willingness, and Ability Cognitions items were developed and scored "1" for cue recognition and "0" for non-cue recognition.

The Cultural Values Construct was measured using the Hofstede (1980: 315), and Hofstede and Bond (1988:12) country scores. The nine Pacific Rim countries analyzed in this study were grouped into three categories for four of the five cultural dimensions. Uncertainty avoidance scores were dichotomous between the nine countries and so two categories were used for this dimension. China was not part of the original Hofstede (1980) study and so scores were approximated based upon the results of the McGrath et. al. (1992) study. In this study, McGrath et. al. found that China and Taiwan were similar in regards to Individualism and Materialism, and so Taiwan's scores were used on these two dimensions for grouping purposes. However, for Power Distance and Uncertainty Avoidance the authors found that Taiwan had moved closer to the U.S. and so higher scores were attributed to China than Taiwan on these two dimensions. In addition, no scores were available for Mexico and Chile on the Time Orientation dimension. These countries were grouped together as medium on this dimension, as the only comparison point in Latin America was Brazil which would have grouped at a mid level on this dimension.

Confirmatory factor analysis (deploying a minimum Eigenvalue of 1 and varimax rotation) was then used to assess construct validity (Bryant & Yarnold, 1995). As more fully described in the article, (Morse et al., 1999), support was generally found for the conceptualized dimensions of entrepreneurial cognitions. And, in light of the significance of the loadings and their general conformance with construct conceptualization and theory (Hair, 1992), the cognition scales were judged to be acceptable for further analysis. Items were summed by factor (dimension) and these dimensions were summed to create a continuous scales of Arrangement, Willingness, and Ability Cognitions (Mitchell, 1994a; Nunnally, 1978).

Data analysis. The overall approach to the testing of the 39 hypotheses previously presented was conservative to reflect the preliminary nature of the research. To test the affects of culture on the cognitions of new venture formation experts, the 371 expert respondents were selected for analysis, and the directional effects of culture on cognition were examined using a simple correlation analysis (Morse et al., 1999) reproduced herein as Table 4-9. The results of these tests are reported in Table 4-8.

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[54] As the research using script cue-based instrumentation develops, it seems to be essential that construct equivalency procedures similar to those set forth in Riordan & Vandenburg (1994) be followed. It should be noted, however, that the utilization of a covariance structure to test the stability and transferability of organizational measures between groups in cross-cultural research presumes that the instrumentation to be so examined has ample evidence supporting reliability and validity in one culture, and that the underlying properties have been well researched (1994: 646).

Where exploratory scales are under concurrent development in a variety of cultures—as is the case in this study—it is not clear that extensive covariance analysis of construct equivalency will be meaningful or useful at this stage of the research. Rather, it appears to be more productive to attempt through matched samples (Hofstede, 1988: 9) and a hierarchical analytical technique (utilized herein), to identify key areas of cross-cultural sensitivity, so that reliability and validity scale development analyses can be performed concurrent with research into the underlying properties of script cue-based instrumentation.

Results, discussion, and conclusions. In this study it was found that cultural values have a significant relationship to venture cognitions, although not always in ways expected. Of the 39 hypothesized relationships, only 11 were not supported. And, of the remaining 28 significant relationships, 15 received support or strong support for a relationship in the predicted direction, while 13 were shown to be related in a direction that is opposite to that predicted. Surprisingly, 9 of the 16 potential relationships classified as Not Applicable in the original conceptualization (Table 4-6) were also shown to have significant relationships. Thus, over two thirds of the relationships between cultural values and venture cognitions were found to be significant.

TABLE 4-9

Means, Standard Deviations, Correlations

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Protectable Idea	2.43	1.10															
2 Resource Access	0.75	0.77	.02														
3 Resource Possession	0.38	0.49	-.02	.06													
4 Venture Specific Skills	0.62	0.49	.19 ***	-.00	-.01												
5 Seeking focus	2.37	1.17	.16 ***	.05	-.06	.05											
6 Commitment Tolerance	0.81	0.78	-.07	.12 *	.11 *	-.06	.12 *										
7 Opportunity Motivation	1.65	0.95	.25 ***	.06	-.03	.10	.20 ***	.08									
8 Venture Experience	1.14	0.89	.03	.11 *	.20 ***	.00	.13 *	.00	.00								
9 Venture Diagnostics	1.30	0.98	.12 *	.15 ***	-.04	.15 **	.16 **	-.06	.16 **	.14 **							
10 Situational Knowledge	0.71	0.72	-.01	.05	.03	-.06	.16 **	.10	.05	.20 ***	.17 ***						
11 Opportunity Recognition	1.91	0.91	.15 **	.08	.05	.11 *	.13 *	-.09	.05	.07	.11 *	.06					
12 Power Distance	2.10	0.88	.33 ***	-.21 ***	-.25 ***	.27 ***	.04	-.21 ***	.16 **	-.26 ***	.07	-.19 ***	.18 ***				
13 Individualism	1.77	0.77	-.25 ***	.20 ***	.13 *	-.25 ***	-.08	.19 ***	-.18 ***	.06	-.24 ***	.18 ***	-.09	-.71 ***			
14 Uncertainty Avoicance	1.87	0.99	.30 ***	-.20 ***	-.17 ***	.31 ***	.05	-.21 ***	.13 *	-.14 **	.17 ***	-.21 ***	.17 ***	.91 ***	-.88 ***		
15 Masculinity	1.84	0.73	.08	-.01	-.07	.10	-.05	-.05	-.09	-.17 ***	-.16 **	-.04	.16 **	.36 ***	.29 ***	.19 ***	
16 Time Orientation	2.21	0.79	.20 ***	-.15 **	-.05	.29 ***	.06	-.18 ***	.08	.02	.24 ***	-.18 ***	.12 *	.61 ***	-.88 ***	.88 ***	-.04

n=371

* p < .05

** p < .01

*** p < .001

The exploratory experience, in hypothesizing and testing Transaction Cognition Theory-based relationships across countries/ cultures, has been instructive. First, we see how unlikely it is that—unaided—one can use logic and an "anchor-country" perspective to predict the venture cognitions of individuals in other countries (Hofstede, 1994). This suggests caution in making suppositions about venturers in other cultures. But second, we also learn that the assertions of Transaction Cognition Theory as to a wider variety of implications are robust in a wider circle of testing. This is encouraging news for global entrepreneurship scholars who are searching for what is systematic in human behavior.

Summary Implications of Studies 1 – 4

This portion of Subsection 4-2 has been devoted to an evaluation of the assertion that using the concepts of Transaction Cognition Theory in the development of a theory of global entrepreneurship, the foundation research record provides at least a "Situation III" level test (Stinchcombe, 1968: 20). Study 1 demonstrated similarity in implications across types of tests through an examination of the association of cognitive variables with new venture formation as to its composition, capability to classify, and its capability to create new venture formation expertise, using data from the Western United States to test the theory. Study 2 demonstrated other similar implications across sampling frames (with "composition" from Study 1 held constant), wherein classification was tested in two countries in addition to the USA: Mexico and Russia. Study 3 demonstrated further similar implications across data type in an evaluation of the idea that cognitive scripts are related to new venture formation, using qualitative methods. Study 4 substantially expanded the list of similar implications across new types of tests and new sampling frames, and 39 hypotheses based upon a more fine-grained composition of new venture formation expertise scales were tested in a seven country the Pacific Rim setting. Thus, an evaluation of the testing different things derived on a variety of dimensions (Stinchcombe, 1968: Situation III) leads to a conclusion that the theory of global entrepreneurship proposed within this chapter qualifies as at least "substantially more credible," with the potential to become "much more credible" as the research progresses.

In explaining my approach toward the establishment of a "guarantor of knowledge" (Mitroff & Turoff, 1973) at the outset of this monograph, I noted in the Introduction that this monograph departs somewhat from Hegelian skepticism as the primary guarantor of knowledge, and instead adopts a more Kantian integrative approach as the mode of persuading the reader. When this approach is evaluated in light of the four "Situation" exemplars offered by Stinchcombe (Figure 4-1) it is hopefully evident that in claiming substantial credibility for Transaction Cognition Theory, I do so based upon Situations III and IV (as more integrative guarantors), with less emphasis on Situations I and II (as skeptical/ falsification guarantors). This is not to say that I reject the first two, but rather—as I believe Stinchcombe does—treat them as the foundation of an integrative ontology.

Chapter 4 Concluding Thoughts

The objective of this chapter has been to investigate and identify a theory of global entrepreneurship: an economic equivalent to physics' planetary model, and genetics' double helix, that utilizes composition theory and produces basic measures to provide common denominator-based understanding of global entrepreneurship. After a summary of the theoretical derivation of Transaction Cognition Theory, the analysis then turned to the evaluation of the theory with respect to generally accepted criteria for the assessment of new theory (Popper, 1979), specifically to its

capability to generate explanations (Section 4-2.1), and its theoretical and operational utility (Section 4-2.2). Of course the reader is ultimately left to draw independent conclusions, but from an author's vantage point I believe that the research and arguments presented provide a convincing narrative as to the capability of Transaction Cognition Theory to generate explanations, and as to its theoretical and operational utility. In Section 4-2.3, Stinchcombe's (1968) logic of scientific inference was applied to evaluate the credibility of the theory. Research highlights from the early chronology of theory development and testing of Transaction Cognition Theory were presented. And, based upon the empirical evidence, a moderate degree of credibility at least has been claimed for Transaction Cognition Theory as it has presently been conceptualized and tested.

The foregoing analysis is limited by the disabilities that are common to its cross-disciplinary (Freeman, 1986) and cross level (Rousseau, 1985) nature. It is further limited at this point in time in that it generates claims and in some instances propositions that have yet to be subjected to test. However, it is hoped that sufficient argumentation and evidence has been presented within, 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 toward this task, and the possibility that in its undertaking we will move our field further forward toward the full articulation of its paradigm that attention should now turn. I look forward to the dialogue that, hopefully, these ideas can generate.

On the basis of such a foundation, our attention now turns toward the educational and practical implications of the theory. Chapter 5 provides the reader an opportunity to examine the educational possibilities for Transaction Cognition Theory to address the creation of high performance results: in market economies, in transition economies, and through the use of expert assistance technology. Thus, in the following chapter, I discuss the teaching and technology applications of Transaction Cognition Theory in both market and transition economies, and suggest a framework for the transfer and induction of transaction cognitions anywhere on the globe—a plausible approach for teaching global entrepreneurship.

CHAPTER 5

APPLICATION TO EDUCATIONAL MODELS

The achievement of high performance results is thought to be directly related to education and thinking (Ericsson & Charness, 1994; Glaser, 1984). The nature of that relationship, and of the education and thinking involved, are the focus of this chapter.

However, by accepting the premise that education and thinking are directly related to the achievement of high performance economic results, we implicitly reject two prevalent notions that bear upon the philosophy of education adopted herein. The first incompatible notion is the idea that personal attributes (e.g. achievement motivation, high locus of control, and risk taking propensity) determine the extent of economic achievement—especially in the entrepreneurial arena. Proponents of this idea assert that there exists some group of individuals with so-called "entrepreneurial personalities," and that as a result much of entrepreneurship cannot be taught, and that the stock of entrepreneurial talent is limited to a rare minority in any society. In this chapter, using recent research on expert performance, I shall instead make the argument that high performance economic results are more directly related to the cognitive systems of individuals, which are in turn created through deliberate practice behaviors. In the model presented, the influence of personal attributes is suggested to be moderate (affecting some aspects of the propensity to practice) v. being

determinative. Thus, the assumption in this chapter is that deliberate practice and consequently a person's cognitive system, rather than that person's personality attributes more directly influences the extent of economic achievement.

The second incompatible notion is the idea that use of the scientific method to discover, explain and teach a set of systematic economic high performance principles and skills is not practical. As a result, there exists a belief that the creation of, or the accurate assessment of new economic opportunity is an arcane process that is difficult to understand, and that only few master. However, as has now been well chronicled (Bernstein, 1998), there has throughout history been a line of demarcation between the phenomena that may acceptably be explained by science, and those which are the province of fate, luck, the gods, etc. For example, prior to the introduction of probability theory, many risks were thought to be unmanageable, which today are simple matters for the actuary and for insurance (life, accident, fire, etc.) (2000: 3). Correspondingly, prior to the occurrence of unacceptable economic shocks (e.g. the stock market crash of 1929, or the automobile quality crisis of the late 1970's and early 80's) the development and application of systematic standards of auditing (the APB: Accounting Principles Board, and the FASB: Financial Accounting Standards Board), or quality (e.g. ISO 9000) were thought to be unworkable, if not impossible. In this chapter I shall demonstrate that recent theory and empirical results make it possible to further push the line of demarcation from the inexplicable in economic performance, toward the scientifically explicable, thereby enabling a vastly larger proportion of interested individuals to perform at higher economic levels.

Thus, by asserting the possibility of creating effective educational models for the acquisition and enhancement of high performance economic expertise, I am explicitly rejecting the prevailing notions and the resulting conclusion that only a minority can achieve high performance economic results. For too long, I believe, these notions have constituted a tacit morality for our tolerating the exclusion of the majority of the world's population from the high performance economic result possibility set. However, if as I am in the process of demonstrating, the exclusion of the majority of the world's population from first tier economic opportunity rests primarily on the absence of the requisite cognitive system, which system is very likely to be widely transferable if based upon the application of Transaction Cognition Theory, then the educational enterprise—that I shall merely be able to outline within this chapter—is of monumental import to our collective economic future.

In the paragraphs that follow, Section 5-1 summarizes the conceptual model that relates high performance economic results to education. Section 5-2 develops the implications of the model for: (1) education in market economies, (2) education in transition economies, and (3) for the possible technological support necessary to sustain and assist in the effective use of this approach.

Section 5-1: Education and High Performance Economic Results

A key turning point in my own research program as it relates to the education of entrepreneurs occurred on the day that I first read Glaser, 1984: *Education and Thinking*. This new direction was further refined when I added to Glaser's foundation, the concepts of Ericsson and Charness, 1994: *Expert performance: Its structure and acquisition*, and those of Charness, Krampe, and Mayer, 1996: *The role of practice and coaching in entrepreneurial skill domains: An international comparison of life-span chess skill acquisition*. In this section, in accordance with the use of the integrative approach as the guarantor of knowledge (Mitroff & Turoff, 1973) in this monograph, I shall summarize a conceptual model, which I believe relates high performance economic results to education.

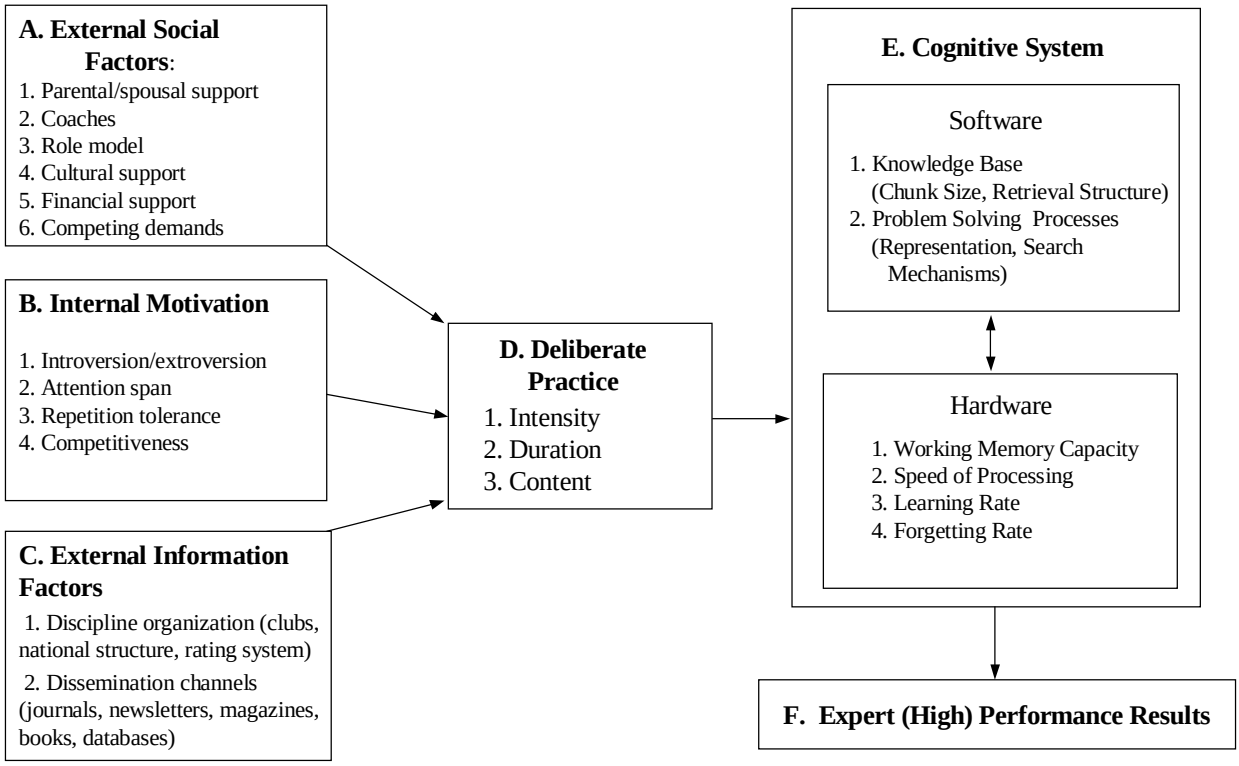
Beginning with the end, so to speak, I should like to present first the conceptual model (Charness, Krampe, & Mayer, 1996), and to explain its component parts (Section 5-1.1). A discussion of the relationship among the parts is the next logical step (Ericsson & Charness, 1994) (Section 5-1.2). Finally, the application of the model to education and thinking (Glaser, 1984), and to the practical pedagogy recommended, utilized, and tested, concludes the section (Section 5-1.3).

A Model

Charness, et. al. (1996) provide a taxonomy that summarizes the factors and their relationship, which research presently suggests are related to expert performance (Charness et al., 1996: 53). Figure 5-1 is a reproduction of this summary slightly adapted from the original figure to: (1) replace item B.3. "compulsivity" with its more accurate and less pejorative substitute "repetition tolerance," (2) align the original title D. "practice" with the literature, thus using the term "deliberate practice," (3) to link the original outcome variable "expert performance" to the outcome variable utilized in this monograph "high performance results," and (4) to designate the subheadings with capital letters A. B. . . , etc. instead of with numbers to avoid later confusion in referencing the figure.

Charness, et. al. constructed and published the taxonomy illustrated in Figure 5-1 in Anders Ericsson's 1996 book *The Road to Excellence: The acquisition of expert performance in the arts and sciences, sports and games.* Accordingly, based upon the context from which it was derived, a strict interpretation of the model might constrain one to conclude that this model may not apply in a more general setting—such as its use in education that leads to the achievement of high performance economic results. However, as reported later in this chapter, there exists both empirical evidence, and evidence from educational practice, which suggests that this model may in fact, be generalizable to the education of global entrepreneurs. The argument supporting this assertion follows.

FIGURE 5-1
General Model of Expertise/Skill Acquisition



Adapted from Charness et. al., 1996

Essentially, the model illustrated[55] in Figure 5-1 suggests that high performance results are an outcome of the cognitive system of an individual. Further, the model illustrates one of the most robust findings in the literature (Ericsson et al., 1993) that deliberate practice is the fulcrum through which the leverage of an expert-level cognitive system is gained. Deliberate practice, in turn, is suggested to result from external social, internal motivation, and external information factors, each of which is thought to arise from the corresponding sets of sub factors illustrated. Deliberate practice, therefore, is thought to be the key to the attainment in individuals of both elements of a person's cognitive system: the software (knowledge bases and problem solving processes), and the hardware (memory capacity, speed of processing, learning rate, and forgetting rate). The challenge for educators thus becomes the construction of an educational experience that fosters deliberate practice; and accordingly, the "action" in an educational sense focuses on boxes A. – D., Figure 5-1.

Interestingly, one of the findings related to the preeminence of deliberate practice as the key to high performance, suggests that the role of coaches is critical (Ericsson & Charness, 1994). As my colleagues and I have worked together to operationalized this model in the University of Victoria

[55] The reader is referred to the original text of the article and the related literature referenced therein for the original definitions of the elements of Figure 5-1. Within this monograph, the definitions offered are intended to be applied versions that are especially suited for the education of individuals who desire to accomplish high performance economic results as previously defined.

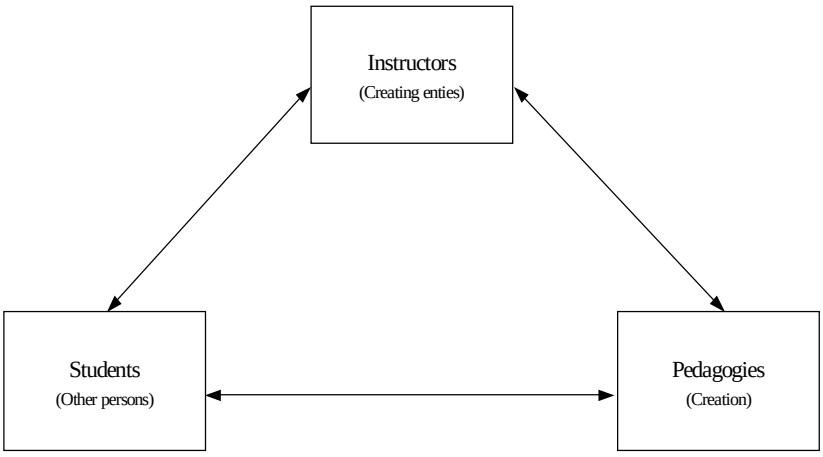
Entrepreneurship Program, we have discovered that of the three necessary elements: intensity, duration, and content, the coaches (we as professors) have primary responsibility only for the content; and the students must take primary responsibility for the level of intensity and for the actual duration of their individual practice experiences.

This practical experience finding appears to be consistent with suggestions in the literature, that neither fully experiential (Newell & Simon, 1972), nor fully individualized (Gardner, 1983; Gardner, 1993) training alone can explain optimal performance (Ericsson & Charness, 1994: 726-727). The three deliberate practice aspects of the model suggested in Figure 5-1 require a combination of learner and coach contributions. This combination, which requires the production of some work of value to others, as illustrated in Figure 5-2, appears to be no different in its structure than any other transaction; and therefore an interpretation in terms of Transaction Cognition Theory—to discern the outlines of the necessary cognitions[56] for an effective educational experience—helpfully illustrates the point.

In the basic educational transaction under present university level pedagogical assumptions, instructors create pedagogies for students, as illustrated in the figure. This compliance with the basic transacting structure permits us to bring to bear the general insights of Transaction Cognition Theory to help to illustrate the expected decision-making flow, which duly parallels the general model as described in Figure 2-10.

FIGURE 5-2

The Educational Transaction



Based on Csikszentmihalyi (1988); Gardner (1993)

The Educational Transaction

In a parallel to the sequence illustrated in Figure 2-10, we can see in Figure 5-3 that the educational transacting sequence parallels the general transacting sequence illustrated in that

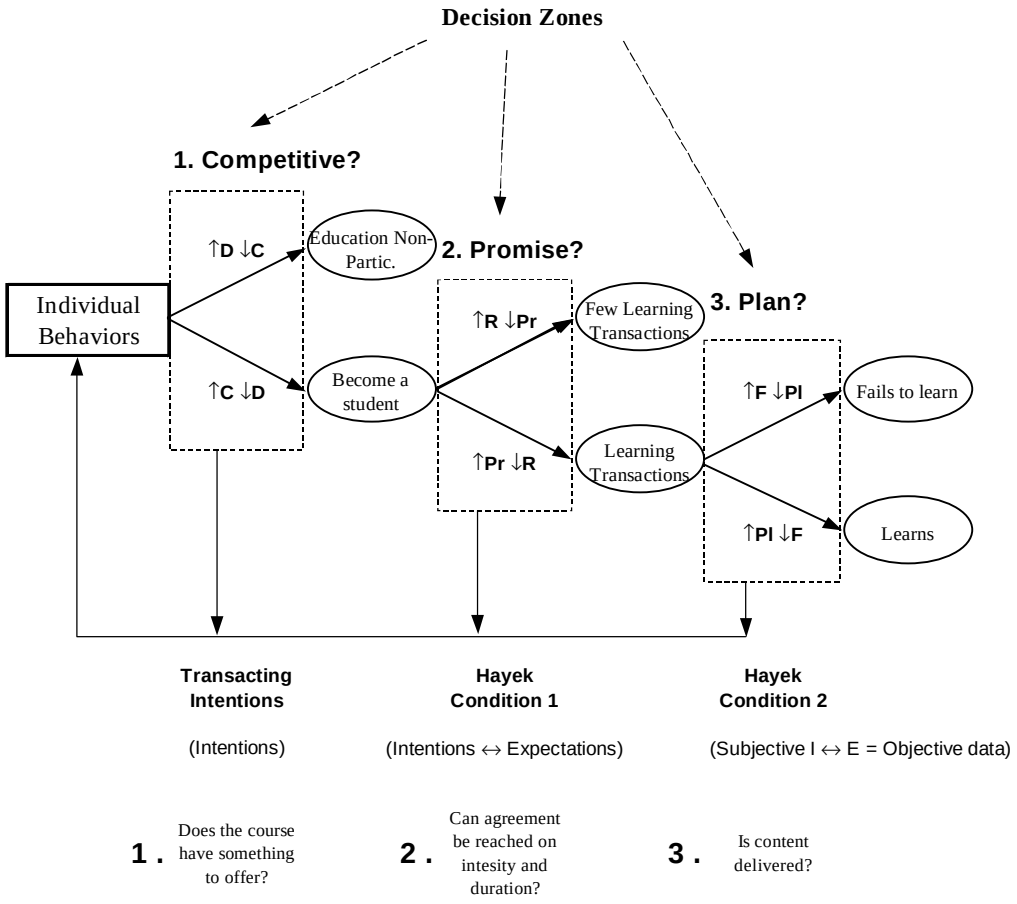
[56] The idea here is that certain enabling cognitions make it possible to acquire further enabling cognitions.

diagram: suggesting—in order—the use of competition, promise, and planning cognitions. After signaling learning intentions—say by registration in the UVic Entrepreneurship Program (which of course require a certain level of competition cognition-based evaluation that this is the set knowledge deliverables desired)—the next question has to do with the crafting of an agreement between producer and consumer (teacher and student).

FIGURE 5-3

A Transaction Cognition Theory Model of

The Educational Transaction



Cognitions:

1. **D**ependency ↔ **C**ompetition
2. **Re**fusal ↔ **Pr**omise
3. **F**atalism ↔ **Pl**anning

Transaction Cognition Theory as represented in Figure 5-3 suggests that the possibility of such an agreement depends primarily on the level of promise cognitions present, and in the case of education,

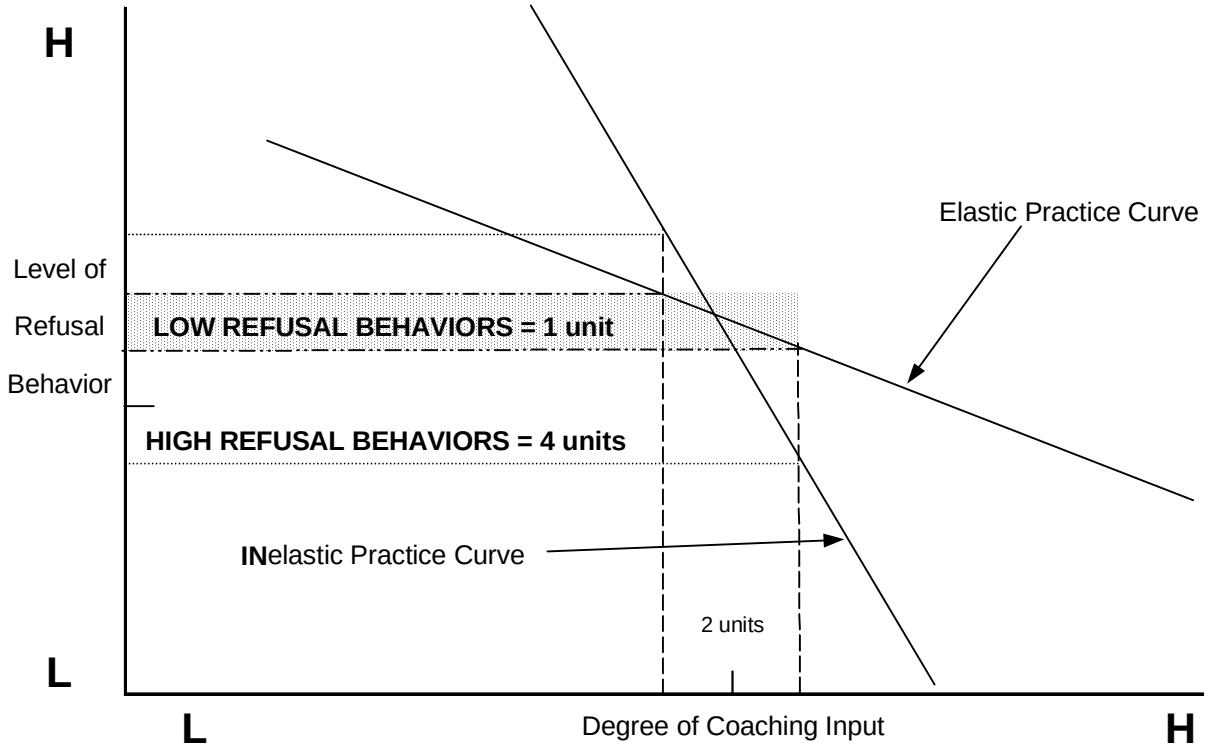
on a low level of "refusal cognitions." Simply stated, practice intensity and duration—the student's responsibility—appears to us to be directly related to the level of refusal cognitions.

We have begun to think of this phenomenon as the "elasticity" of a student's practice curve. As illustrated in Figure 5-4, the shape (elasticity) of this practice curve dramatically affects the level of refusal behaviors as a function of level of coaching input, and as a result, the expected level of intensity and duration of student practice.

FIGURE 5-4

The Effect of Coaching Input on Refusal Behaviors

Given Practice Elasticity



Thus in the elastic case, 2 hypothetical "units" of coaching input result in only 1 unit of refusal (low refusal behaviors); while in the INelastic case, those same two units produce 4 units of refusal. Clearly, the propensity to practice hard and long is much higher, where there is an elastic practice curve.

As we have interviewed each student who participates in our program over the past several years, we have discovered that the elements of the model shown in boxes A, B, and C, of Figure 5-1 tend to be indicators of the kind of practice curve, and correspondingly the level of refusal behavior that we experience. For example, students who have had previous experience with coaches (Figure 5-1, A.2)—such as in athletics, or music and drama, for example—tend to be more willing to practice our program elements with intensity and duration: but more especially tend to exhibit lower levels of resistance to new ideas. Or, conversely, those who have competing demands such as full time jobs (Figure 5-1, A.6), tend to be much more resistant to the in-depth and sometimes unavoidably time-consuming experiential assignment activities that are essential (Glaser, 1984;

Mitchell & Chesteen, 1995; Petranek et al., 1992) for the acquisition of the expert knowledge/ cognitive structures that produce high performance results (Ericsson, 1996).

As a result of these observations, and to assist students with effective self-selection decisions (e.g. whether to register for our ENT Program or not), we have introduced as a self-help mechanism, a Student Preparation Guide, which suggests that students prepare a portfolio (Gaglio & Mitchell, 1999; Gaglio, Mitchell, & Vesper, 1998), which develops the promise cognitions necessary for the student and teachers to be able to agree on an exchange with respect to the work (coaching input from the ENT Teaching Team)[57].

According to the transacting sequence illustrated in Figure 5-3, once an agreement has been reached between—in the case of the learning transaction—student and teacher, through the portfolio-based development of promise cognitions and de-emphasis of refusal cognitions[58], are then able to focus upon the "content" sub factor (D.3. in Figure 5-1). It is intuitively obvious that highly intense, long duration practice of the irrelevant will be likely to have little effect on the production of high performance behaviors in a field. Thus, content is key, and is the responsibility of the teacher.

As developed in Chapters 2, 3, and 4 in this monograph, the content necessary to support the induction of a high performance cognitive system in an individual involves the creation of a high performance script or knowledge structure. Knowledge structures are thought to be a subset of the larger "schema" notion, and have been termed a "schemata." Glaser writes:

> A schema is conceived of as a modifiable information structure that represents generic concepts stored in memory. Schemata represent . . . interrelationships between objects, situations, events, and sequences of events that normally occur (Glaser, 1984: 100).

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[57] The *Student Preparation Guide*, which follows the format suggested in Figure 5-1 A. – D., is included as an operationalization example in Appendix 1.

[58] Since it was noted as a point of educational philosophy at the beginning of this chapter, it should not be lost on the reader that this approach to the education of fledgling entrepreneurs contradicts most of the characteristics-based assumptions about entrepreneurs (i.e. that they have a high locus of control (Berlew, 1975) and high risk taking propensity (Coulton & Udell, 1976), for example). Critics might assert that the encouragement/ self-selecting of individuals who are willing to engage in high intensity and duration of practice behaviors, through the identification and teaching of those individuals who are likely to exhibit low refusal behaviors, will eliminate those with so-called "entrepreneurial potential." We are not convinced.

Our experience with the very few willful and non-compliant (high refusal behavior) students that we have encountered since our Program began, is that a higher proportion of our coaching input appears to be wasted; and that, in addition, as high refusal individuals act out their objections in class it simply detracts from the learning environment for the majority. Whether such individuals are more likely to succeed or not as entrepreneurs is an empirical question, which has been quite thoroughly addressed by scholars who find little explanatory power in the locus of control or risk taking propensity approach to the understanding of individual entrepreneurship (Brockhaus, 1980; Hull et al., 1982; Sexton & Bowman-Upton, 1983).

Based upon our understanding of the research record as it presently stands, we see potential in Transaction Cognition Theory to be used as a foundation to educate the majority of individuals in the thinking patterns that are related to high performance economic results, and see little merit in the search for the personality traits of ideal entrepreneurs. We agree with those who propose the model shown in Figure 5-1, that there are likely to be aspects of the personality that shape the propensity of an individual to engage in deliberate practice (Charness et al., 1996; Ericsson & Charness, 1994). And it should be obvious that the self-selection processes and low refusal emphasis that we propose, and have found to be effective, do not violate these standards.

The content of schemata is therefore the key element, and Glaser as do others e.g. (Read, 1987) indicates that this content has two parts: "sequences," and "norms." Earlier in this monograph (Section 3-2) the individual entrepreneurial cognitive sequence has been extensively described (e.g. searching, screening, planning/ financing, setup, startup, ongoing operations/ growth.) However, the process for the development of script norms still requires further attention.

Practice Content Norms

Schemata theory assumes that there are schemata for recurrent situations, and that one of their major functions is to permit the interpretation of situations (Glaser, 1984: 100). Situational interpretation can be thought of as a learning process through which individuals acquire knowledge through an iterative process that consists of interrogation (in-depth examination), instantiation (repetition of same), and falsification (sorting which ideas to keep and which to discard) (1984: 101). Glaser suggests that these thinking skills are best invoked through the development of general intellectual capabilities that he refers to as the "self-regulatory or meta-cognitive capabilities present in mature learners . . . such as knowing what one knows and does not know, predicting the outcome of one's performance, planning ahead, efficiently apportioning time and cognitive resources, and monitoring and editing one's efforts to solve a problem or to learn" (1984: 102). Where is such information to be found?

In a 1995 study, Susan Chesteen and I developed a pedagogy for entrepreneurship based upon the foregoing theory supplemented with concepts from the experiential learning literature and tested it in practice. In the paragraphs that follow, I summarize the key ideas, and the tests performed to validate the method. The content of the UVic Entrepreneurship Program is based upon the results of this study.

Theory and hypothesis. In earlier chapters of this monograph and in published research, it has been argued that the achievement of high performance economic results is related to the quality and content of individual knowledge structures/ expert scripts and that entrepreneurial expertise is an important factor in successful new venture founding (Mitchell et al., 2000). In this paper we applied an instructional pedagogy based on Glaser, 1984 to evaluate its efficacy for enhancing entrepreneurial expertise. Thus, the focus of this paper is an instructional pedagogy that improves students' entrepreneurial expertise through the application of the recommendations of expert information theorists regarding script acquisition. Glaser, and other information processing theory scholars suggest that contact with expert scripts is a primary means for acquiring expertise (Glaser, 1984; Norman et al., 1976; Read, 1987). Concepts from the simulation and gaming literature (Petranek et al., 1992) were employed to design the pedagogy that features such contact as its primary emphasis.

The effectiveness of this pedagogy was examined using a model derived from expert information processing theory and tested using multiple discriminant analysis. The experiential pedagogy was shown to enhance novices' propensity to <u>enter</u> into the sequential processes of the new venture script, beyond that of either non-enhanced novices or experts, while providing a significant improvement in novices' ability to <u>do</u> the things the new venture script requires.

To enhance individual knowledge structures within a specialty domain, Glaser suggests an educational process that utilizes individual contact with expert scripts as a primary instructional technique. As noted above, the process follows a course of interrogation, instantiation, and falsification whereby script rules and generalizations are tested and revised in ways that facilitate

learning and thinking. It has further been proposed that comparing scripts is an efficient way for novices to learn expertise in a particular role (Lord & Kernan, 1987).

This theory of instruction appeared to have promise in entrepreneurship education, but its general nature required more specific definition for classroom practicality. The experiential learning literature provided direction for the design and implementation of an expert script-based instructional pedagogy. Petranek, Corey, & Black (1992), for example, had proposed a series of activities for experiential learning that engage students in three levels of learning from a simulation: participating, writing, and debriefing. In our design of an experiential learning pedagogy employing new venture expert scripts we used their proposed series. In Table 5-1 I have reproduced the summary table from the published article (Mitchell & Chesteen, 1995: 294), which details the experiential enhancement activities that we utilized as our pedagogy, and which are now employed in the successful ongoing delivery, at the University of Victoria, of the Entrepreneurship Program.

Information processing theory proposes that an expert may be distinguished from a novice by observing an individual's ability to recognize cues related to an expert "script" (Leddo & Abelson, 1986; Lord & Maher, 1990; Read, 1987). Striking differences between novices and experts have been identified, particularly in the way they store and retrieve information (Fiske, Kinder, & Lartner, 1983; Lurigio & Carroll, 1985).

Table 5-1
Experiential Enhancement Activities

(Glaser 1984)

(Petranek, Corey, and Black 1992)

	Interrogation	**Instantiation**	**Falsification**
Participating	Depth interview with entrepreneur mentor	Hearing the results of other depth interviews	Comparing & contrasting within-group views after mentor interview
Writing	Written description of entrepreneur mentor script: Part II of assigned report	Written description of student novice script based upon individual prior experiences, case studies & lectures from classes: Part I of assigned report	Written comparison analyzing similarities and differences between student novice and entrepreneur mentor scripts
Debriefing	Responding to class questions following group report on depth interviews	Listening to other groups debrief their depth interviews in class	Verbally evaluating the information experienced in class debriefing session

For example, a novice tends to respond to surface features of problems while an expert uses a more fully developed schema, organized around context-relevant scripts (Chi et al., 1982). If the experiential pedagogy were to have a significant effect, a distinct level of expertise that is neither expert nor novice should have resulted. Thus, we expected:

Hypothesis 1: Differences exist on the mean vector expertise levels of experts, novices, and enhanced novices.

Methods. Our study may be described under the three headings: data gathering, measurement, and data analysis.

Data gathering. The subjects in the experimental study were 174 residents of a large Western U.S. metropolitan area. The data included responses from: (1) a novice group (control), where subjects either had no contact with venturing concepts, or had not personally created new enterprise, (2) an enhanced novice group (treatment), where subjects who have not personally created new enterprise received expertise enhancement course materials and experiences according to the previously described pedagogy, and (3) an expert group of entrepreneurs who qualified under the following definition of "expert." Experts in this study are individuals who had either (1) started a business that has been in existence over two years, or (2) started three or more businesses, at least one of which was a profitable, ongoing entity.

The experiential treatment centered on the *participating* portion of the experiential series described earlier in Table 5-1. For two, quarter-long business school courses designed to optimize students' capability to apply the principles and practices of entrepreneurship, we formulated an instructional strategy that incorporated new venture expert scripts. In each class approximately one half of the students were randomly assigned to an "expertise enhancement" group. For these students, the script-based instructional strategy was implemented by utilizing "participating, writing, and debriefing" activities to enhance expertise consistent with the script comparison method suggested by Glaser, Lord and Kernan. Those students not assigned to the "treatment" group were encouraged to complete a project of individual interest, such as to prepare a business plan or feasibility study. All students participated in the activities described below as the "base" pedagogy. The undergraduate course was a senior strategy class taught with an entrepreneurial emphasis. The masters' course was a strategy elective focusing on innovation and entrepreneurship. Students in both courses were primarily business majors.

The "base" pedagogy for both courses incorporated an active approach, whereby concepts generally regarded as essential for success in generating new business ventures were applied in a variety of practical settings. As discussed in the paragraphs that follow, application of the active approach requires that a number of "practical settings" be identified and included in course implementation. We believed that the specific activities included in the base pedagogy could be somewhat flexible, depending upon available resources, contacts, and opportunities, making the application of this pedagogy realistic in a fairly wide range of instructional circumstances.

The courses encompassed four basic components of instruction, which were integrated to form the basis of the experiential learning context. These included knowing, thinking, doing and participating, all of which are active rather than passive in nature. As noted in the description that follows, the application of the script-based instructional strategy was conducted in the participating component of each course. In all other respects, each course was designed to follow the base pedagogy for each student.

In the base pedagogy provided to every student, knowing was stimulated through the lectures, readings, discussions, and unscheduled quizzes which were a part of theory-based seminars conducted throughout the quarter. Textual materials consisted of lectures and cases drawn from one set of texts for the undergraduates (Kao, 1991), and from another for the masters' students (Stevenson et al., 1994: previous edition). Thinking was encouraged through integrative

assignments such as writing and publishing an article in a metropolitan newspaper, and impromptu case analysis. Doing was engendered through site visits, group interaction in assigned-case workshops, and dialogues with practicing new business venturers during class sessions. Participating was accomplished through one of two activities, depending upon whether students were randomly assigned to the treatment group (enhanced novices) or to the control group.

In the treatment group experiential activity, novices compared their entrepreneurial scripts to those of experts, as suggested by expert theory. The "participating" portion of this activity was an experiential project where "enhanced" student novices were divided into groups and assigned an "entrepreneur mentor"--someone who had successfully created new enterprise (Low & MacMillan, 1988). Each group conducted a "depth interview" that covered a guided set of questions (Mitchell & Chesteen, 1995: 293).

Individual students in the treatment group were then asked to "journalize" their experience in a three part report that included: (1) a description of that individual student's "rules for succeeding in entrepreneurship" (the student's script), (2) a summary of the rules for successful venturing as provided by the entrepreneur mentor (the mentor's script), and (3) a critical assessment of the similarities and differences between the two. Upon completion of the reports, the student treatment group novices were separated from the control group to engage in a "debriefing" session in which each group reported their experience and key points from the mentor interview, compared the entrepreneur mentor's script to theirs, and discussed strengths and weaknesses of their mentor's script. This script-based experiential activity integrated the Petranek, Corey and Black and Glaser frameworks as shown in Table 5-1.

Measurement. Measurement of the effectiveness of the script-based experiential activity was accomplished using two expertise scales that were new at the time, but have subsequently been refined e.g. (Mitchell et al., 2000): (1) the Entry scale containing 15 items, and (2) the Doing scale containing 18 items. Leddo and Abelson (1986) suggest that script enactment requires both "entry" (arrangements) and "doing" (willingness and ability) scripts in sequence. Leddo and Abelson write:

> These privileged functions we label Entry and Doing; the former occurs early in the script, and the latter near the end. Entry presupposes the success of script entry arrangements . . . Doing presupposes the actor's willingness and the ability to carry out the action serving the main goal of the script. (1986: 121)

Each script recognition cue used to form these scales was created using criteria in the Read (1987) script/scenario construction model (Mitchell, 1994a). Scale construction involved (1) a review of the entrepreneurship and expert theory literature to derive appropriate script cues, (2) the division, by a panel of experienced entrepreneurs, of these cues into script "entry" cues and script "doing" cues (more fully explained in later paragraphs), and (3) testing these items when combined as scales, for convergent validity using reliability analysis[59].

[59] Subsequent theoretical development has resulted in the observation that such scales are formative indicators, v. reflective indicators of the constructs being measured. As a result, the tests of internal validity were not, strictly speaking necessary. Because the individual items are independent pieces of evidence of the scripts they are formative indicators (Pedhazur & Schmelkin, 1991: 54), and are added together to create interval scaled variables (Nunnally, 1978). Formative indicators define, or give rise to, the construct, but are not a reflection of it. Since each item in a formative scale helps to define the meaning of a construct, affirmative responses to all items are not required from an individual respondent to capture construct meaning. For example, an increase in the pool of people and assets that a

The justification for using these script recognition cues as empirical evidence came from expert theory. The " . . . inability to infer further knowledge from the literal cues in the problem statement" is considered to be the primary reason for a novice's difficulty with problem solving (Glaser, 1984: 99). Novice responses were therefore expected to center around the surface features of problems (Chi et al., 1982). Therefore, it seemed logical to expect that the ability to recognize script cues (as opposed to selecting a distracter statement) could be used to distinguish experts from novices.

Some of the cues included in the Entry scale were as follows (subjects were invited to select the choice which described them most closely):

When investing in a new venture, I think it is worse to:

(a) wait too long, and miss a great opportunity

(b) plunge in without enough information to know the real risks.

Is it worse to:

(a) waste your time thinking over an opportunity

(b) commit time and money to a cause that may not succeed.

I want to get:

(a) a piece of the big money

(b) through life financially in one piece.

I am looking for a:

(a) place to invest my resources

(b) better way to manage my resources.

If I have a lot of free time available, it is more desirable to:

(a) find a new venture to put my time and talents into

(b) take the opportunity for some well deserved recreation or travel.

Expert entrepreneurs were expected to select item (a) in these examples, since making this selection tends to reveal the propensity of an individual to "enter" the new venture script.

Some of the cues included in the Doing scale were as follows:

My knowledge about new business:

(a) is fairly elaborate, due to the many variations I have observed

(b) comes from my intuition; each new business has a "personality" which can be sensed.

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respondent controls e.g. (Mitchell et al., 2000: 992 Appendix Item 20), is one indication of mastery of a script relating to arrangements. However, a respondent may have an arrangements script that is based on the masterful use of other resources without reference to changes in their available pool of people and assets. Also, since formative indicators are independent components of a construct, they may not be highly correlated. Consequently, it is inappropriate to expect unidimensionality at the construct level, and it is inappropriate to assess reliability at the item level with Cronbach's alpha, which is based on inter-item correlation (Howell, 1987: 121).

I have more highly developed contacts in the:

(a) new venture area specifically

(b) community generally.

When someone describes a problem in a new business I;

(a) recognize key features of the problem quickly, and can suggest alternatives from examples I can cite.

(b) use my instincts to suggest questions which should be asked to solve the problem.

I am more:

(a) aware of many new venture situations; some which succeeded, and others which failed, and why

(b) familiar with my own affairs, but keep up on business in general.

I have:

(a) failed in at least one new venture

(b) never failed in a new venture.

An individual who chose "(a)" was thought to recognize elements critical to the execution or "doing" of things that are required in a new venture. It was assumed that the level of expertise of an individual is positively related to the number of script cues s/he recognizes.

The items that were created for the Entry scale embody characteristics strongly associated with willingness to embark upon a new venture (Glade, 1967; Kihlstrom & Laffont, 1979; McClelland, 1968; Sexton & Bowman-Upton, 1985). It is commonly accepted that characteristics such as propensity to take action, moderate risk taking to capture an opportunity, and a continual search for opportunities (v. non-venture application of resources) indicate that an individual is more willing to venture.

The items that were created for the Doing scale embody the elements strongly associated with the actual creation of a new venture (Low & MacMillan, 1988; MacMillan, 1983; Smilor & Gill, 1986; Stuart & Abetti, 1990; Vesper, 1980). Entrepreneurial experiences such as previous ventures (successes and failures) and the building and utilization of networks, improve an entrepreneur's ability to start a venture. Reliability analysis produced a coefficient alpha score of .67 for the Entry scale and .61 for the Doing scale, which are considered to fall within an acceptable range (Eisenhardt, 1988; Finkelstein, 1992; Van de Ven & Ferry, 1980)—but please see the footnote for an updated conceptualization of the scales as formative v. reflective (Howell, 1987).

The randomized Solomon Four-Group experimental design employed in this study provided a high level of control over threats to internal validity (Fraenkel & Wallen, 1990). In the study approximately half of the individuals in the classes where the enhancement exercises were conducted were randomly selected to receive both a pre-test and a post-test. A t-test ($n = 16$) was performed using the Entry and Doing scale scores of novices who had no exposure to enhancement activities. The results reported in Table 5-2 showed no pre-test bias.

Table 5-2 also shows the results of a matched pairs t-test ($\underline{n} = 11$) for equality of pre-test means between the novice (control) and enhanced (treatment) groups. No significant difference was found between pre-test means on the Doing scale; however, a significant difference was found between pre-test means on the Entry scale, possibly suggesting a difference between the groups in their propensity to venture. The inequality of the pre-test means on the Entry scale was not deemed to invalidate the results of the analysis since, as shown later in the paper, the Doing scale provides 78 percent of the discriminating power in the analysis of study results.

TABLE 5-2

t-Test of Controls for Pre-test Bias

	Pre-test/Post-test Comparison		Between Groups Pre-test Means	
Variable	t Value	2 - Tail Probability	t Value	2 - Tail Probability
Entry Scale	-0.36	0.723	3.46	0.006
Doing Scale	-1.15	0.269	-0.80	0.441

Data analysis. The level of venturing skill, acumen, or expertise has been the traditional focus of both the practitioner literature and of venture capitalists (Hall & Hofer, 1993; Hisrich & Jankowicz, 1990; Sandberg, 1986; Stuart & Abetti, 1990). Two elements of the capability in entrepreneurs, skills and skill propensity, have been shown to be related to new venture performance (Herron, 1990). Furthermore, expertise has been related to new venture formation (Bull & Willard, 1993; Mitchell, 1994a; Mitchell et al., 2000).

The desirability and effectiveness of expertise enhancement interventions may be weighed and evaluated if distinctions can be drawn among individuals based on levels of specialized knowledge. One critical question that appears to be the key to the creation of new venture formation expertise (Mitchell, 1994a) is whether experiential learning—especially the methods suggested by Glaser, 1984, can produce enhanced novice scripts in individuals that more closely approximate those of experts. In this case it was desirable to analyze the three expertise groups (expert, novice, and enhanced novice) as a dependent variable, using scores drawn from the Doing and Entry scales as independent variables to ascertain whether such discrimination is possible. Thus, Hypothesis 1 was tested using multiple discriminant analysis.

Results. A multiple discriminant analysis (MDA) of the three groups using the two independent variable scales Entry and Doing was conducted. A test of equality of group mean vectors (based on Wilks' lambda) resulted in a multivariate $\underline{F} = 20.06$ ($\underline{df}_1 = 4$, $\underline{df}_2 = 340$, and $\underline{p} <$

0.0000). Thus the three groups were shown to have significantly different levels of expertise. The Entry and Doing scales were also found to be significant predictors of group membership $p < 0.0000$.

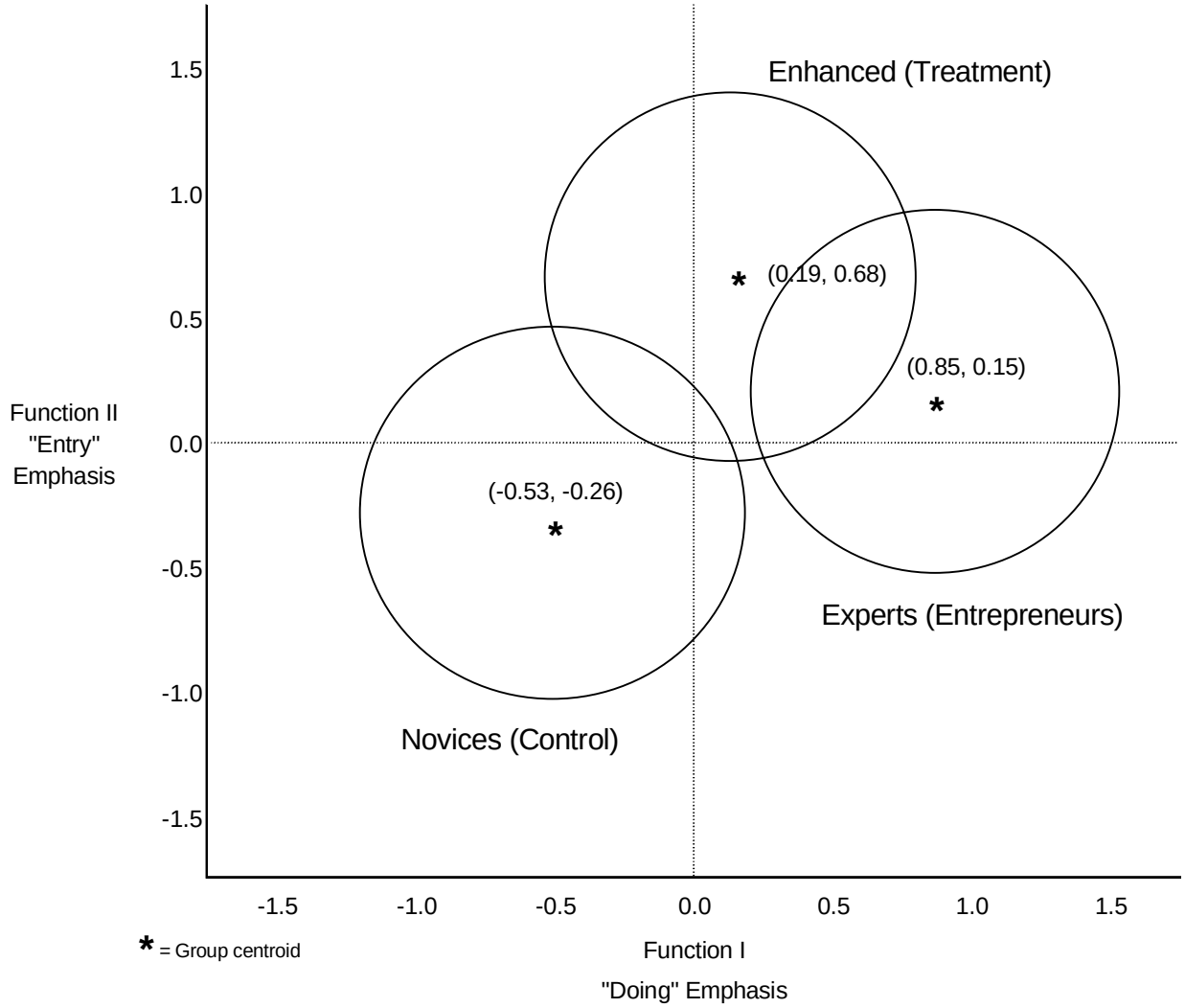
Two discriminant functions were found to be significant below the .01 level, with discriminant function I accounting for approximately 78 percent of the discriminating power, and the two functions together accounting for 100 percent. In addition, the discriminant functions' eigenvalues were found to be significant ($p < .01$) using an approximate chi-square statistic.

The centroids (means) of the three groups are plotted in Figure 5-5 as ordered pairs (coordinates) shown near each centroid, so that the separation of groups can be visualized. Isodensity ellipses (circles) that are expected to contain 20 percent of the subjects in each group were plotted with a diameter of each circle computed to be 1.34 units (Watson, 1982). The isodensity circles in Figure 5-5 depict the overlaps among the groups. The groups are appreciably overlapped even though the means are significantly different for these new venture expertise characteristics.

The classification functions derived by MDA were computed using the post-test results of the 174 participants in the study, and the observations were classified as belonging to the group having the highest estimated posterior probability. A jackknife analysis (Lachenbruch, 1967) was used to successively withdraw each observation from the predictor function for classification, while permitting the remaining observations to contribute to the computation of the discriminant function. The classification matrix giving the number of subjects classified into the different groups compared to their actual groups, using proportionate prior probabilities (Eisenbeis & Avery, 1972), and the percentages classified correctly are reported in Table 5-3.

FIGURE 5-5:

Discriminant Function All Group Scatter plot: 20% Isodensity Circles



The total correct classification was found to be 84.2 percent for the novice (control) group, 20.0 percent for the enhanced novices (treatment) group, and 54.7 percent for the expert (entrepreneur) group. The two discriminant functions substantially increase classification capability since, based on the proportion of each group in the sample, it would be expected that 54.6, 14.4, and 31.0 percent of the subjects (respectively)—only 41.5% of subjects—would be classified correctly. The model improves our capability to distinguish group membership by approximately 160% (65.9/41.5) and permits us to improve classification capability over the prior probability by 154%, 139%, and 176% for the novices, enhanced novices, and experts respectively.

TABLE 5-3

Jackknifed Classification Matrix

			Number of cases classified into group		
Actual Group	Prior %	% Correct	Novice (Control)	Enhanced (Tx)	Expert (Ent)
Novice (Control)	54.6	84.2	80	1	14
Enhanced (Tx)	14.4	20.0	12	5	8
Expert (Entrep)	31.0	54.7	22	2	29
Total	41.5	65.9	114	8	51

As anticipated, the lower "enhanced novice" classification percentage (20.0%) indicated that the enhanced novices' scale scores fall somewhere between "expert" and "novice," demonstrating that members of the treatment group were no longer strictly novices, but were not yet experts.

An interpretation of the two discriminant functions was possible when the loadings, each in excess of .95 for both variables, were examined. The means plotted in Figure 5-5 show that on discriminant function I, the novice group has the lowest combined score, the expert group the highest, and the score of the enhanced (treatment) group is about half-way between experts and novices. With a rotated loading of 0.967, discriminant function I (shown on the horizontal axis of Figure 5-5) appears to be emphasizing the "doing" dimension of entrepreneurship; i.e., the actual creation of a new venture. Groups located at higher positions on this function tend to expose themselves to information differently, create and sustain competitive advantage, and seek higher control. The expert group appears to be much farther along in the venturing life cycle in that they have experienced failure episodes in their venturing pasts, have built support and resource networks, and have had frequent contact with other entrepreneurs. All of these characteristics are reflected in the items of the Doing scale.

Discriminant function II is notable for the separation of the enhanced novice group on the high side of the vertical axis. The high rotated discriminant loading (0.967) of discriminant function II stresses the "entry" dimension of entrepreneurship; i.e., the willingness to embark upon a new venture. Groups located at higher positions on this function tend to have a low need for support and conformity, and reveal qualities of assertiveness, initiative, risk taking, and a high tolerance for ambiguity. The plot indicates that the enhanced novice group is separated somewhat from the other groups along the vertical axis.

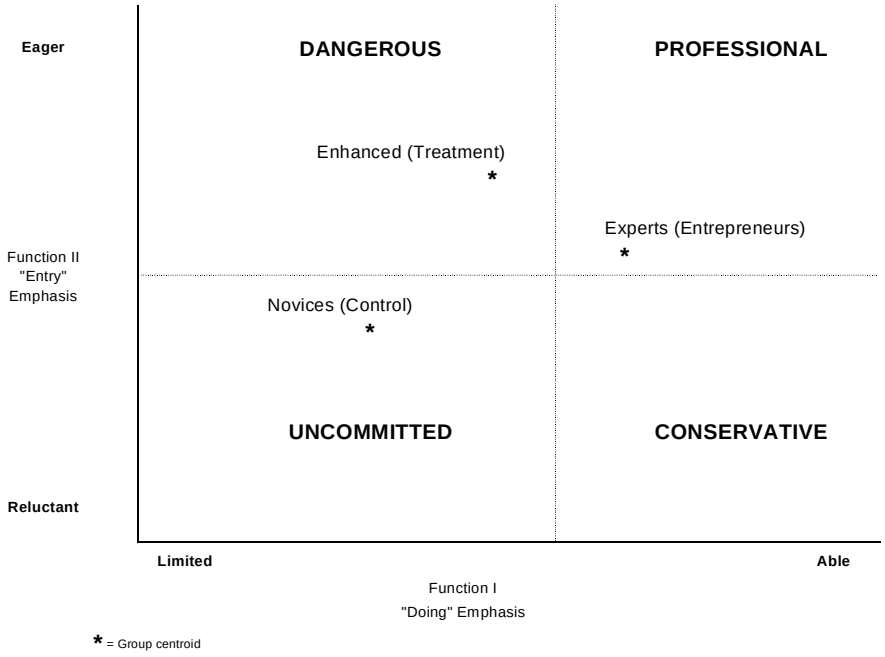
It is likely that this phenomenon is, in part, due to the effects of the experiential treatment. There are at least two explanations for this outcome. First, the enhanced novice group may have in some sense "overlearned" the critical aspects of expertise in the entry dimension due to their intense

and rapid exposure to the vital entrepreneurial issues and strategies. And the entrepreneurial experts, who have learned to address problems and issues surrounding the entry dimension of venturing over a much longer period of time, may have forgotten some of the vital concepts to which the enhanced novices had recently been exposed. Second, it is plausible that the heuristical nature of the instructional treatment may have had an emotional impact on the students. In a previous study we noted that students' eagerness to become entrepreneurs varied directly with the charisma, ebullience and enthusiasm of expert mentors (Mitchell & Chesteen, 1993). Since the experiential treatment in this study provided in depth contact with high profile, appealing, and dynamic entrepreneur mentors, it is reasonable to assume that the level of enthusiasm of the students increased, thus raising their willingness to venture (enter into the script).

Discussion. This study revealed a pattern that is now likely to be expected from the use of an experiential pedagogy based upon the Glaser, 1984 approach, and that pattern is evident in Figure 5-5. In the enhancement of expertise, we can expect to see the formation of a new and significantly different cognitive group that is neither expert nor novice. This group is likely to be underprepared for "doing" and overly eager to "enter" into venturing activity. More particularly, this study was the first to demonstrate that the "entry" and "doing" dimensions as suggested by Leddo & Abelson (1986) provide a primary basis for distinguishing among four major categories of cognitive engagement in the field of entrepreneurship (although—similar to other findings in the expert information processing literature—there is no reason to suppose that this phenomenon would be limited to the entrepreneurial domain).

FIGURE 5-6:

Cognitive Archetypes Derived from Mitchell & Chesteen, 1995



Thus, if we were to take the results plotted in Figure 5-5 as archetypal, we could—by simply matching the dividing lines with the findings, delineate three of the four possibilities suggested by entry/ doing-based theoretical framing. The result is illustrated in Figure 5-6.

As noted above, the sample upon which Figure 5-6 is based is based in the Western USA. However, given the robustness of subsequent findings in multiple countries (Mitchell & Seawright, 1995; Mitchell et al., 1998; Mitchell et al., 2000) it appears to be likely that these archetypes should be useful in mapping the types of entrepreneurial approaches globally. What are the implications of these findings for education?

The implication is that credible evidence suggests that entrepreneurial expertise can be taught. As described more fully elsewhere (McKenzie, Mitchell, Morse, & Smith, 2001) the UVic model of entrepreneurship education is based upon this theoretical foundation, and has been recognized in peer-reviewed fora for its successful application at the University of Victoria[60]. The second implication may also be derived from the results illustrated in Figure 5-5. While the experiential and expert enhancement-based pedagogy is successful in the creation of a new group of "enhanced novices," it certainly does not produce experts in a few months. As a result of this finding, we suggest, and have done so ourselves, that the objectives of cognition-based entrepreneurship education be adjusted to realistically portray what is realistic given the empirical data[61]. We believe that improvements in the pedagogy are still possible, and continue to engage in a process of continuous improvement as a result. A third implication, to which we have already alerted the scholarly community (Mitchell & Chesteen, 1995: 302; Mitchell et al., 2000: 979) is the possibility that entry scripts without doing scripts "may result in venture creation decisions, but these ventures are not likely to last very long (a "rockets to oblivion" phenomenon)." So, instructors are cautioned to beware of the power of the pedagogy to create eagerness, which can precede preparation by a sufficient margin that the danger of "low performance economic results," is ever-present.

As noted earlier in this section, the content of schemata is the key element, and while the individual sequence has been extensively described earlier in the monograph (e.g. searching, screening, planning/ financing, setup, startup, ongoing operations/ growth.), it was necessary to more fully describe and validate the process for the development of script norms. The pedagogical approach developed on the basis of Mitchell and Chesteen, 1995 has served as an example of such a pedagogy.

Summary of Section 5-1

In this section the objective has been to present, evaluate, and explain the component parts of a conceptual model of expertise acquisition (Charness et al., 1996) that has been adapted for use in entrepreneurship education as a prototype for education in the representative sets of cognitions that I argue are at the core of high performance economic results. The relationship among the component parts of the model was next explored. Finally, the application of the model to education and

[60] The UVic Entrepreneurship Program won the USASBE Model Undergraduate Entrepreneurship Program Award, presented at the US Association for Small Business and Entrepreneurship Annual Meeting, San Antonio, TX, February 19, 2000. Further, the Program also won the 1999 Academy of Management Entrepreneurship Division "Innovation in Entrepreneurship Pedagogy Award," presented on August 9th, at the 1999 Annual Meeting held in Chicago.

[61] Thus, for example, the UVic program objective is to prepare individual students so that they can acquire the knowledge and critical thinking skills necessary to enable them to become venturing experts within 5 years of graduation (this being half the time that the conventional wisdom suggests is necessary to acquire an expert knowledge structure (VanLehn, 1989)).

thinking, and to the practical pedagogy recommended, utilized, and tested, has concluded the section.

The primary idea that drives the construction of the pedagogy described in this section has been that deliberate practice is directly and effectively associated with the development of the cognitive systems (software and hardware) (Figure 5-1 F.) that lead to high performance results. It has seemed to me to be only logical that what has been documented to contribute to excellence in other fields of achievement such as sports, games, and the arts (Ericsson, 1996) would likely work in the field of business. In this section, I have documented one application and its testing to illustrate the practicality of the construction and implementation of such a pedagogy in the education of new entrepreneurs.

What does this mean for teaching?

In the next section, the implications of this model for the educational content that can enhance the achievement of high performance economic results in both market and transition economies, and for harnessing information technology to support and further enhance these results is discussed.

Section 5-2: Implications of the Educational Model for High Performance Economic Results

In this section, and within its three subsections, I address the implications of a deliberate practice-based educational model of teaching to achieve high performance economic results for implementation within the global setting. I begin (Section 5-2.1) with a discussion of the present challenges that confront educators within the mainstream business schools in North America, and consider the refinements that are still necessary, in my opinion, for a more optimal path within these economies, toward high performance economic results.

In the second subsection (Section 5-2.2), I turn to an analysis of the application of the deliberate practice cognitive model within economies that are still in the process of transition to fully functioning market economies. In this section I introduce the idea of a fundamental level of economic literacy, which I define using Transaction Cognition Theory to be: adequate economic thought based upon the three universal subsets of transacting knowledge: the planning, promise, and competition cognitions necessary for transacting regardless of culture or political system.

In the and final subsection (Section 5-2.3) I describe some of the progress that has been made in the construction of expert assistance technology that supports the cognition-based deliberate practice approach to education for high performance economic results[62]. The section concludes with observations on the future of this educational model, which then suggest the discussion contained in Chapter 6: Future Implications.

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[62] This software has been cited as a world-wide best practice in distance consulting in: *Potentials and Pitfalls in Using the Internet to Deliver Business Development Services to SMEs*, A Report to the Donor Committee on Small Enterprise Development, Commissioned by the Open Society Institute, October 27, 1998, and presented by Jerome A. Katz, Ph.D., Mary Louise Murray Endowed Professor of Management Saint Louis University, St. Louis, MO USA.) (New Venture Template™ Expert assistance software © Ron K. Mitchell, 1995, cited along with: Multimodal Consulting Services - Ernst & Young's ERNIE, Email Consulting For Everyone– SCORE's Email Service, Multimodal Training for SMEs in Finland – University of Oulu's LearnNet.

Section 5-2.1: Educational Models in Market Economies

Business schools in the USA have been criticized for insufficient attention to the education of entrepreneurs (Porter & McKibbin, 1988: 66). However, there is little research that differentiates better from worse ways of teaching entrepreneurial skills (Katz, 1991) and little integration of the contributing disciplines to a business school education (Porter, 1997). The transaction cognition model suggests solutions to each of these three problems.

First, for reasons previously identified, it suggests that the substance of an entrepreneurship education should be the development of the planning, promise and competition cognitive scripts of individuals. Second, it suggests that these cognitive scripts—expertise in the field of entrepreneurship—can be developed using the deliberate practice-based expertise enhancement methods identified in the elaboration of expert information processing theory as it applies to the acquisition of expert performance within a given domain (Ericsson & Charness, 1994; Glaser, 1984; Mitchell & Chesteen, 1995). Third, Transaction Cognition Theory suggests a likely means for integration across disciplines. For example, a focus group comprised of MBA students selected the following courses taught in a well-recognized MBA program as primarily helping to develop the three cognitive models as follows:

- Planning: financial and management accounting, managerial economics, applied research and consulting methods, organization design, international business, finance, operations management, cross-national management.
- Promise: law, human resource management, marketing, statistics (another course—if offered—would be business and society).
- Competition: strategy, information technology.

Thus, transaction cognition entrepreneurship theory suggests a workable and practical foundation for effective entrepreneurship education.

An explanation of the high degree of success of many of the "pracademic" models of entrepreneurship education (e.g. the Swinburne Model, McMullan, 1998) can trace their success to the intuitive application of the foregoing transaction cognition principles to enhance the expert information processing of students. The creation of planning (business plan-based, e.g. (Stevenson et al., 1994)), promise (stakeholder-, trust-based, e.g. (Barney & Hansen, 1994; Mitchell & Agle, 1997)), and competition (entrepreneurial strategy-based, e.g. (Rumelt, 1987)) courses, which combine with experiential (practice e.g., (Ericsson et al., 1993)) and conceptual (script interrogation, instantiation, and falsification, e.g. (Glaser, 1984)) courses taught in an integrated semester-length module along with as much real-world contact with practicing entrepreneurs as possible, is therefore suggested.[63]

[63] At this point the University of Victoria undergraduate program, Victoria, BC, Canada, is the only one known to have been explicitly based upon this suggested model. This 16-month program utilizes two 4-month academic semesters at the beginning and end of the program, coupled with 2 back-to-back work-term semesters (8 months) to provide experience in the middle of the program. Since its implementation began in May 1997, since an operational understanding of relevant constructs is still under development (e.g. this monograph), and since the objective of this particular program is to create the capability to achieve high performance economic results beginning five years after graduation (assuming work life v. graduate education begins immediately), undertaking a realistic assessment of the impacts of this approach is only beginning to become practical. The Program has, however, been highly rated by student participants, and anecdotal evidence of Program effectiveness abounds.

It appears likely that if the use of the transaction cognition model as the basis for entrepreneurship education within developed market economies creates increases in the success of individual transactions (whether in jobs or ventures) and of transaction sets (the ventures themselves), then the productivity of an economy must unavoidably be impacted. A populace that is "educated" in the solution of transacting problems that have heretofore resulted in transaction failure could have a material impact upon the wealth creation capacity of an economy. The result would be a high performance economy (Williamson, 1996b: 332) where the friction of transaction costs that impedes transactions would be minimized.

Further details on the development of specific Transaction Cognition Theory-based pedagogy are provided in the following section, which addresses the development of pedagogical content in transition economies. Since transition economies require the most in-depth development, the details—if only to be discussed once—should rightly be discussed within that context. This objective is addressed in the next subsection.

Section 5-2.2: Educational Models in Transition Economies

Since 1996, the term "transition economy" has been applied to those economies that have been undergoing a change from a dependency upon central planning to more reliance upon market mechanisms (WorldBank, 1996). Included as transition economies have been those in Central and Eastern Europe (CEE), the newly independent states of the former Soviet Union (NIS), and economies in East Asia, notably that of the Peoples Republic of China (Peng, 2001: 95). Transition economies are characterized by an economic no-man's land that is no longer fully subject to the protections of planning, but is not yet fully responsive to the motivations of the marketplace. For example according to policy makers who are close to the situation, the fledgling venture capital industry in China faces: an absence of market-based laws and regulations, the lack of effective exit mechanisms, few qualified investors, underdeveloped support institutions (e.g. law firms, management consultants, financial and accounting advisors, market analysts, project evaluators, etc.), a lack of talented managers, and no clear property rights (Fensterstock & Li, 2001). Thus, while the economies within CEE, NIE, and China may be considered to be transition economies, it is also possible that many other less-developed economies would also qualify as "transition" as described herein, and should therefore also be included in the discussion that follows.

Education is likely to play a significant role in the development of solutions to the problems faced by transition economies. But what education? And for whom?

There exists some degree of skepticism that general concepts have a place in such a discussion due to the problem that "every transition economy is different" (Peng, 2001: 106). But as noted earlier in this monograph, there also exists evidence in support of the assertion that there are also regularities—especially cognitive regularities—that that do cross borders and can be reliably transferred (Charness et al., 1996; Mitchell et al., 2000) and suggest that the possibility of creating educational models applicable more generally to transition economies is indeed possible. So while I readily acknowledge that vast differences exist among transition economies in such areas as culture, size, former economic traditions, level of preparation for the market—and the list could perhaps go on endlessly—I am also constrained to argue that a balanced approach must also allow for the identification and utilization of similarities as well. In actuality, it appears likely that each economy will include manifestations of differences (Mitchell, Smith, Seawright, Morse, & Peredo, 2001) within the systematic structure suggested by Transaction Cognition Theory. Accordingly, the

suggestion of educational models that are, or can be, applicable to transition economies is rooted in the models and ideas previously developed within this monograph.

As one might expect, these models are centered in the deliberate practice model of expertise acquisition, with the content focal point being the enhancement of planning, promise, and competition cognitions, and the corresponding diminishment of fatalism, refusal, and dependency cognitions at multiple levels of analysis. I believe that it is unrealistic to expect that such complex problems as those presented within the transition economic context will not require a matching level of depth in theory to respond effectively. In the paragraphs that follow, I shall demonstrate how the outlines of the model can be reliably drawn using the previously developed concepts from Transaction Cognition Theory. Consistent with these principles, then, the development of the educational pedagogy for a given economy can be divided into the process (sequence) and the content (norms), but beginning first with content.

Content

As illustrated in Figure 5-1, the fulcrum of the model is deliberate practice, which depends upon the quality of practice content for its effectiveness. The ultimate objective of an educational model in the case of transition economies appears to be no different than it is for first tier economies: to enable transaction creators to apply effective levels of transaction cognitions (planning, promise, and competition), to organize exchange relationships (among transaction creators, other persons, and the work), to utilize the sources of market imperfection (bounded rationality, opportunism, specificity), to create new value. Each element of this objective must be addressed for the content of a transition economy educational model to be complete. The identification and specification of each of these elements in turn suggest the steps needed to accurately identify educational content for a given economy.

Step 1. Establish effective levels of transaction cognitions. As reported in earlier chapters, Transaction Cognition Theory suggests that within each economy/culture/setting there is likely to exist sets of planning, promise, and competition cognitions, and fatalism, refusal, and dependency cognitions. As far as I know, the exact catalogue of these cognitions—by economy—has not yet been compiled, and is a subject for extensive future research. Further, within transition economies—despite the observed regularities between groups of transaction creators across countries—there are likely to be highly specific cognitions, erroneous cognitions, and missing cognitions, each of which bears upon a determination of the necessary content. Thus, both a within-groups and a between groups similarity analysis appears to be necessary.

Accordingly, the first step in the development of pedagogy for transition economies is to identify common specific cognitions within an economy group at a given level of analysis. The methods for this descriptive research are well known, and have been published for both market and transition economies at the individual and community levels of analysis e.g. (Mitchell, 1994a; Mitchell & Morse, 1998; Peredo, 2000). Briefly summarized, they include the following steps: (1) conduct in-depth interviews with a representative group of transaction creators within an economy, who have—as in the case of the individual/firm cross-level analysis—started at least one business (transaction stream) that is an ongoing entity, (2) conduct textual analysis of the interviews to

identify the common elements, (3) construct script cues and test them using a sample[64] of individuals within the economy. This process should identify the planning, promise, and competition cognitions that are crucial to that economy at the relevant level(s) of analysis. The foregoing steps should be repeated using a representative sample from the non-transaction creators to identify the common fatalism, refusal, and dependency cognitions. On the basis of this research, the cognitive scripts to be enhanced, and those to be lessened through coaching may be identified.

The next step in the establishment of the effective cognition content for transition economy pedagogy is to conduct a comparative analysis to identify common specific cognitions at a given level of analysis between economy groups and thereby surface erroneous and missing cognitions. Although research in this area is in its infancy, there does exist some empirical evidence upon which to base such an analysis (Mitchell et al., 2000; Mitchell et al., 2001; Morse et al., 1999). In this analysis, a careful evaluation of specific within-country common cognitions in comparison to those that are generally found to be efficacious across economies should be conducted. Where certain specific cognitions are found to be missing, they should be considered for addition to pedagogy content. Where specific cognitions are found to be contradictory or erroneous, then further research and analysis should be undertaken to resolve the differences, and to suggest the appropriate additions/deletions to/from pedagogy content.

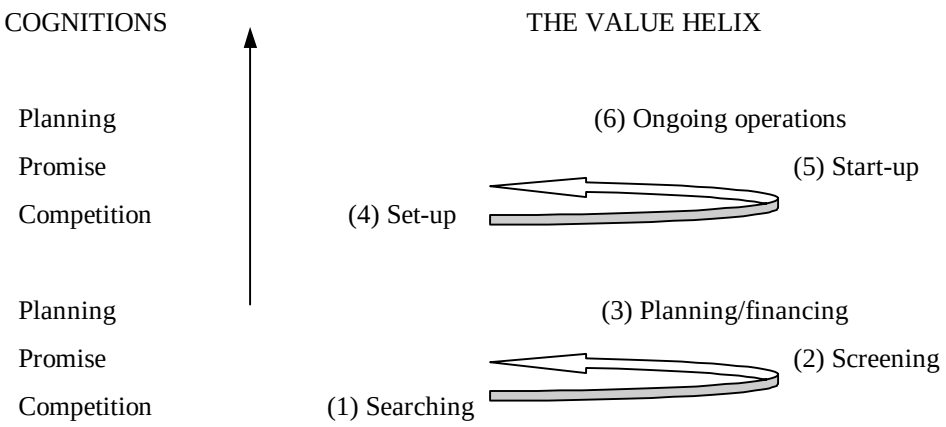
Step 2. Organizing exchange relationships (Using The Value Helix). As noted in earlier chapters (e.g., Figure 2-10) the process of organizing exchange relationships follows a standard pattern, beginning first with the use of competition cognitions, proceeding then to utilize promise cognitions, and then utilizing planning cognitions; after which the whole process can repeat itself in several iterations, which we can term the "value helix." Thus, at the individual level of analysis (Section 3-2) the cross-level venture creation process involves two iterations of the value helix as illustrated in Figure 5-2[65].

[64] In transition economies, and with entrepreneurs in general it has often proven difficult to accomplish strictly random sampling. However, the use of purposeful sampling that is designed to minimize sampling error has been found to be effective (Mitchell et al., 2000).

[65] In the subsection following, which discusses the application of Transaction Cognition Theory to the creation of expert assistance technology, three iterations of the Value Helix can be seen to provide the underlying order for the assessment of opportunity at the venture/firm level of analysis.

FIGURE 5-2

Sample Exchange Relationship Organization Process



Accordingly, the second step in the pedagogy is to organize the teaching/delivery of the concepts identified in Step 1 using the value helix approach. As previously described in Section 5-1, there exist proven experiential expert script-based teaching/learning processes that can assist with the knowledge transfer necessary.

Step 3. Utilizing market imperfections to create value. In Section 2-2 earlier in this monograph I presented a highly detailed discussion of how the addition of adequate information to transactions could utilize the social frictions/transaction costs within a transacting environment to create value. Two of the methods (Drag to Glide, and Slippage to Traction) required the use of BOTH promise and planning cognitions. The other two methods (Slippage to Glide, and Drag to Traction) required only the employment of planning cognitions. Examples were cited at the individual and firm levels of analysis.

To support an effective pedagogy for teaching in transition economies, a third step in the creation of this pedagogy appears to be required. Depending upon the levels of analysis that are the point of focus (e.g. cross-level individual/firm: the creation of new business—individual creates a firm) illustrative case studies from the economy in question that clearly and unambiguously illustrate the four value-adding processes should be identified and made available to learners. Once the case details are mastered, then Transaction Cognition Theory suggest that the experiential teaching method as described in Section 5-1 should be utilized to create this portion of the expert knowledge structure in the learners.

It should not be lost on the reader that I have deliberately structured this pedagogy creation discussion to encompass use at multiple levels of analysis. The reason for this as it applies to transition economies is that it is often the case that in order to solve the transition problems, the pedagogy will need to be applied at multiple levels of analysis. So, while the approach to application at the entrepreneurial levels of analysis (individual, firm) might now be evident, I believe that it is

worthwhile to explain how I envision that this approach could also be applied at other levels of analysis (e.g. the society level).

Application at the society level of analysis is important to education within transition economies, because many of the obstacles to the creation of wealth exist at that level. Thus, as indicated earlier in China's present case, the obstacles to the creation of venture capital markets include an absence of market-based laws and regulations, the lack of effective exit mechanisms, few qualified investors, underdeveloped support institutions (e.g. law firms, management consultants, financial and accounting advisors, market analysts, project evaluators, etc.), a lack of talented managers, and no clear property rights (Fensterstock & Li, 2001). Referring to Table 3-4 in a prior chapter, it may be readily observed that some of the missing elements on Fensterstock and Li's list are planning cognitions relating to the productivity levels of the economy (e.g. the lack of talented managers, underdeveloped support institutions), some are promise cognitions relating to the establishment of the institutions of trust within the economy (e.g. laws and regulations, property rights), and others are competition cognitions relating to the realization of value (lack of effective exit mechanisms).

Although quite a massive undertaking, it is nevertheless conceivable that the leaders of transition economies or other development agencies might wish to consider the identification and communication of societal level effective transaction cognitions as a necessary prerequisite for the eventual success of a market system tailored to their particular needs. With the advent of mass media, and with the dramatic reduction of telecommunications costs globally, it seems to me that now is the time to undertake such far-reaching initiatives. I believe that it is now practical to consider that relevant case studies, founded in transaction cognition theory, could be disseminated using appropriate media. The result—as suggested in the discussion of compositional models in Chapter 3 (e.g., Table 3-3)—is that each of the less-aggregated levels of transaction analysis could benefit and be supported by the additions to the quality of planning, promise, and competition cognitions at the society level of analysis.

In Chapter 6 (following), the idea of a global human economic literacy project is explored in more detail. The essential conceptual framework for such initiatives, however, rests upon the foundation illustrated in the general model of expertise/skill acquisition (Figure 5-1) presented in Section 5-1. This leads us next to a discussion of educational process.

Process

Recall from Figure 5-1 that there are three sets of preconditions that support deliberate practice: external social factors, internal motivation, and external information factors. It therefore seems logical to focus on these three areas as the starting point for suggestions about a more general educational process that applies to transition economies. During my previous discussion of this model (Figure 5-1) in Section 5-1, I attempted to differentiate within the three components of deliberate practice that are illustrated within the diagram (intensity, duration, and content), those components for which the learner is primarily responsible, and those for which the coaches or teachers are responsible: content being suggested as the primary responsibility of the teacher, and the and intensity and duration of practice being the primary responsibility of the learner. Thus, as I now discuss the practice elements of the model in Figure 5-1, as they relate to educational process within transition economies, I seek to relate the influence of the preconditions suggested in the model to the propensity for stimulating intensity and duration in a learner's practice process.

And, as presaged in the introduction to this chapter, my philosophy of education has considerable bearing on the implications that I suggest for educational process. Thus, while the relationships illustrated in the model might be utilized—perhaps intentionally—only descriptively within more mature market economies (to explain why high performance results do occur), I take the position that the relationships illustrated in the model are also prescriptive: suggestive of, and pointing to the steps that are needed to remove the impediments to an effective transition from a planning/command economy to a market one. So in the following paragraphs, I take the liberty to expand description to suggest instrumental and normative (Donaldson & Preston, 1995) implications as well.

External social factors. The deliberate practice general model suggests that "how long and how hard an individual will deliberately practice" is related to the influence of a relevant social community. Significant others (parents/spouses), coaches, other role models, and the support of an individual's underlying culture, along with financial support and relief from competing time demands, are all thought to influence practice intensity and practice duration. Thus, community-based economic development initiatives appear to be crucial to stimulating the learner-motivated aspects of deliberate practice.

But unfortunately, many such initiatives focus on "outside-in" approaches[66], and as a result miss the opportunities suggested by Transaction Cognition Theory to also build from the inside: mind by mind, transaction by transaction. But to take advantage of these opportunities requires that the social system—e.g., the external social factors in the model—be addressed in a participatory and holistic way, as called for in some of the community economic development initiatives with which I am familiar, e.g. (SFU, 2001). For almost a decade, it has been thought that formulating a social system with the proper channels and support structure for the processes that can lead to more effective entrepreneurial behaviors is essential for newly emerging capitalist countries and for interventionist ones as well, as they seek to revitalize stagnation within their economies (Herbner, 1992). But how is this to be done? What process should be utilized?

In earlier chapters I have developed the ideas: (1) that the successful transaction is the basic building block for the achievement of high performance economic results, (2) that successful transacting results from the set of decisions that follow a general cognitive sequence that answers the following questions: Do I (as a potential transaction creator) have something economic to offer to other persons in the marketplace? Can I agree on an exchange with another person? Can I deliver on that promise?", and (3) that the major barriers hindering people who live in under-performing economies from acquiring the competition, promise and planning cognitions they need to achieve economic independence is the presence in those same people of dependency, refusal and fatalism cognitions. Recent research in economically struggling regions in my own province in Canada suggests that these communities are missing crucial cognitions that allow individuals within them to participate in transactions and, hence, contribute to the economic development of the community (Gurnell, 2000; Mitchell & Morse, 2001). Thus, from the perspective of public policy-makers, the question should be: What cognitions are missing from these communities and why? Then

[66] "Governments have concluded that the symptom – the "shortage" of capital – and the cause are one and the same. The solution that follows from the government's perspective is to jump in and provide billions of dollars in subsidies, "strategic investment," research & development funding, and seed capital through dozens of programs that target everyone from micro-enterprises to huge multinationals . . . (but) there is scant evidence that any of these programs work (Vanagas, 2001).

community economic development initiatives should focus on building effective levels of the competition, promise and planning cognitions that are necessary for the successful completion of transactions.

Descriptively, then, we can expect to see within transition economies, that weakness in the community transaction cognition foundation will have a dramatic influence on the external social factors that ought to be supporting the intensity and duration of economic learning experiences. As a result, it should be expected that a variety of misinterpretations of the actual situation (Kruger & Dunning, 1999) will impede the development of high performance economic results in these economies. What is the remedy?

Prescriptively, it is clear that leaders in transition economies must sponsor initiatives that result in the development of effective levels of transaction cognitions. Accordingly, I view the Human Economic Literacy initiative described in the previous subsection to be an essential element in the economic development of transition economies. I therefore expect, for example, that mass communication of the ideas that lead toward increases in the general levels of planning, promise, and competition cognitions, and away from the prevailing influence of fatalism, refusal, and dependency cognitions will have a signal impact upon the practice levels of entrepreneurship (as defined herein), and upon the resulting community cognitive and level of high performance economic results. Parents/spouses will be more supportive because they have a deeper understanding; coaches will be able to call for and get greater intensity and duration; role models will be more easily identifiable, and their actions more easily interpretable; and general cultural and financial support should increase, while the impact of competing demands for time and attention should diminish.

Idealistic? Yes.

Perfect? No.

Better than many present processes? Probably.

Worth trying? Definitely.

But social factors alone do not fully shape the propensity to deliberately practice. The process model also suggests that internal motivation factors will also have an effect.

Internal motivation. Earlier in this chapter while setting forth my educational philosophy, I explicitly rejected the idea that personal attributes are determinative in the likely achievement of high performance economic results. However, within that discussion I noted an important exception: that the propensity to practice (alluding to the intensity and duration of practice) is nevertheless shaped to some extent by elements of internal motivation. It is clear from the literature that the personal attributes: attention span, repetition tolerance, and competitiveness are thought to be positively related to the intensity and duration of deliberate practice (Charness et al., 1996). And, depending upon the nature of the task, introversion and extroversion (also shown in the diagram) either help or hinder; and in the case of entrepreneurship have been shown to make little difference (Ginn & Sexton, 1990).

It is within the realm of internal motivation that I believe we will find the source of high or low practice refusal behaviors (Figure 5-4). At present, I am not aware of successful interventions that can assist an individual to change the slope (elasticity) of practice refusal behavior. In the University of Victoria Entrepreneurship Program, we have accommodated ourselves to this reality by implementing a student preparation guide (Appendix 1) and Portfolio Preparation Assignment that is

announced as a prerequisite assignment for success in the program. It has been our experience that students with high refusal behaviors tend to self-select, and remove themselves from the educational pool. Perhaps in future, methodologies will emerge that make this rather Darwinian approach to dealing with internal motivation obsolete. However, until that time, I am persuaded that providing pre-educational self-screening hurdles for learners is a humane process for ensuring that scarce teaching resources are better allocated—especially in transition economies where such resources are scarce.

Thus, Transaction Cognition Theory allows—through the inclusion of internal motivation factors in the model—for the influence of personal attributes in explanations of high performance economic results. The key distinction, however, is that we should be looking for "practice personalities," not entrepreneurial personalities.

External information factors. As might be expected in a social cognitive explanation of "persons in a situation" (Fiske & Taylor, 1984: 4), external information factors are thought to have a strong bearing on a person's cognitions, mediated in the case of model under discussion by the propensity to deliberately practice. I have come to believe that within the set of external information factors we can find the greatest opportunities for the enhancement of high performance economic behaviors. Further, it is my impression that even within the so-called developed market economies, the support of external information factors for the deliberate practice of relevant content is, in fact, underdeveloped. In my conversations with colleagues who work within transition economies, it has been their conclusion that the utilization of up-to-date external information will accelerate their capabilities to catch up and perhaps even surpass the performance of some present leaders in the achievement of high performance economic results. Their reasoning goes as follows[67].

In the West, the reported failure rate of new ventures is between 50 and 80% depending upon measures (Kirchhoff & Greene, 1995; Kirchhoff & Phillips, 1989). Contacts with venture capitalists in North America suggest that of the approximately three surviving ventures out of ten, one is a spectacular success, one is moderately successful, and a third is at or near break-even. The remaining seven produce some level of economic loss—even disaster at times. Policy makers within transition economies view this record of results with alarm. They cannot envision nor can they accept that capital formation at the early stages of economic enterprise should be so perilous. Frankly, I agree with them.

Certainly, there are voices within the venture community, which argue philosophically for the status quo: nothing can be done; it's just the way things are, etc. However, as noted earlier in this monograph, the steady progress of scientific inquiry has been to systematically subdue risk (Bernstein, 1998). Science continues to penetrate the domain of philosophy. Addressing problems as diverse as infant mortality, or quality problems in production, the scientific method has contributed systematic analysis for superstition, fatalism, and mediocrity. Thus, it is not surprising to me that policy-makers within transition economies are asking: Why should we accept the capital formation failure rates of the West? Can we not do better than this?

Thus, as new policies are considered within transition economies, the goal is to identify and implement a much higher standard. In Chapter 6 (following), the idea of global venture analysis standards is explored in more detail. The essential conceptual framework for such initiatives,

[67] Referring to discussions with the individuals who are, for example, writing the new Venture Capital policies for the Central Government in the Peoples Republic of China.

however, rests upon the foundation illustrated in the model (Figure 5-1). Organization of a discipline, and the establishment of effective dissemination channels are suggested to have a direct and positive effect upon deliberate practice, and through such practice upon people's cognitive system and expert performance results. One of the more effective dissemination channels, one that is becoming increasingly available, is to utilize information technology to assist individuals in the application of expert capabilities. A description of one possibility with direct application to the teaching of global entrepreneurship follows in the next subsection.

Section 5-2.3: Technology Implications for Teaching Global Entrepreneurship

Entrepreneurship technology is defined as the application of entrepreneurial science to commercial objectives. One of the means whereby the "entrepreneurial science" of Transaction Cognition Theory—rooted in information processing theory—can be applied to commercial objectives, is through the use of information technology. Expert assistance computer software offers one such opportunity. As differentiated from artificial intelligence systems (Chi et al., 1982; Granger, 1980; Marr, 1977), expert assistance systems perform for an individual only the operations that—if performed by that individual—would lessen their level of performance (e.g. long computations, complex comparisons, etc.).

Based in the functional relationship, $Y = f(x)$, expert assistance entrepreneurial technology relates key planning, promise, and competition independent variables to likely outcomes as a multivariate dependent variable. By minimizing the computational burden, specialized information technology that serves as an expert assistance system can assist in the representation of complex problems in a manner that can enhance expert performance. The analytical framework that forms the foundation of this approach is explained in the first subsection and then this framework is further explained in a second subsection in which the conceptual content is explored in more depth. In the third and final subsection, the analytical framework is linked to Transaction Cognition Theory—specifically to the Value Helix.

The Analytical Framework

The analytical framework that forms the structure upon which the technology is based mirrors the functional relationship in the following paragraphs as follows: (1) the establishment of likely outcomes, (2) the identification of representative independent variables, and (3) the application of a example functional relationship.

Establishment of likely outcomes. Experts can recognize "positions" e.g. 50,000 to 100,000 board positions in chess (Chase & Simon, 1972). This recognition invokes use of a schema (VanLehn, 1989), schemata (Glaser, 1984), or expert script (Leddo & Abelson, 1986; Read, 1987). However, if data are not in a recognizable position, experts use of schema is as limited as that of novices (Ericsson & Charness, 1994). Decision-making by experts is thus limited by the existence and extent of an expert schema in a domain. Thus, the first key to the creation of useful expert assistance technology is to establish for business enterprises the equivalent of "board positions," which can then be related by a decision-maker to any actual set of circumstances that may be encountered. A set of 14 case studies with assigned coordinates on the independent variables serve as these points of comparison.

The identification of representative independent variables. Like the forensic evaluation of a partial strand of human DNA that supports, for example, a legal judgment, the assessment of a

partial set of venture characteristics such as the following list—as a sample of a venture's genetic material—can provide entrepreneurs with the capability to make the business judgments that distinguish viable from less-viable ventures. These variables include: new combination, product-market match, net buyer benefit, margins, volume, repetitive purchase, long-term need, resource availability, non-imitability, non-substitutability, holdup, slack, uncertainty, ambiguity, and core competence. All in all, our capability to identify at least fifteen sample attributes of viable ventures suggests the possibility of utilizing *venture viability templates* to identify and observe necessary venture characteristics as independent variables in a functional relationship.

Application to the functional relationship. The idea that enables the construction of expert assistance technology for the assessment of economic opportunity relates the decision-making process to the standard functional relationship. Decision-making for the most part, appears to be essentially a binary exercise (e.g. makes sense/doesn't; will do it/won't; etc.). Binary exercises use base 2 to delimit the consequences of that decision, depending upon the number of independent variables influencing (which have yes-no conditions) that decision. Hence, the number of consequences (conditions on the dependent variable) in a multiple-variable decision situation are an exponential function of the number of independent variables (n) on a base of 2 (e.g. 2^n). Thus, for two independent variables the number of conditions is $2^2 = 4$; for three independent variables the number of conditions is $2^3 = 8$; and for four independent variables the number of conditions is $2^4 = 16$; etc.

Thus, for example, where promise expertise requires that stakeholders be identified and prioritized according to the absence or presence of the independent variables: power, legitimacy and urgency to yield eight possible outcomes (2^3), e.g., (Mitchell et al., 1997), the functional relationship $Y = X_1 + X_2 + X_3 + e$ can be more easily and expertly assessed using software that transforms levels on the independent variables into categorical form using to an expert assistance algorithm (Agle & Mitchell, 1998). Or where planning expertise is enhanced by the relation of the multiple independent variables of venture performance to multiple venture outcomes e.g. (Mitchell, 1998b), or where competition expertise is improved by the capability to assess individual competition scripts (Mitchell, 1994a), the expert assessment of the respective functional relationships $Y_m = X_n + e$; and $Y = X_1 + X_2 + X_3 + X_4 + e$ can be enhanced through the use of algorithms created to speed the task, embedded within self-contained software that trains the individual to use it, and contains input and output mechanisms that permit the individual to concentrate on the elements of the problem that are better assessed using the human mind[68] (VanLehn, 1989).

The consequences of decisions based upon multiple independent variables in particular domains are known to experts—and appear to be analogous to "board positions." As such, these "consequences sets" form part of an expert's *knowledge structure* or *expert script*. If decision-making comparisons utilizing a mental template such as the one proposed herein (15 variables in a binary decision situation yielding $2^{15} = 32{,}768$ possible combination conditions) are attempted without the use of known points of reference (board positions) then analysis is effectively disabled,

[68] Presently software that assists with the utilization of planning scripts (Mitchell, 1995) has been utilized by hundreds of venturers, by the rating panels in several venture capital conferences sponsored by the Wayne Brown Institute, Salt Lake City, Utah, and by new venture teams in two Fortune 500 companies, with a reported positive impact to date in the $10 million range. Testing of the promise cognition expert assistance system has followed the more traditional research trajectory (Agle et al., 1999). Also, the competition cognition expert assistance system has been in use at several universities in North America (Canada, Mexico, USA) for several years, with excellent results (Mitchell et al., 1998).

and an individual is relegated to functioning as a novice. Accordingly, a set of case prototypes, based upon actual ventures, is required for comparison purposes. This results in the following functional relationship[69]:

$$Y_{1\text{-}14} = f\,(attributes)_{1\text{-}15}$$

Conceptual Content

In this subsection the conceptual content of the above model is explored. This time, however, we begin with the independent variables, follow with the outcome/dependent variable, and conclude with more detail on the functional relationship.

Independent variables—Some standard attributes. Several authors in the business administration and economics literature have argued that the business viability of a venture might be assessed by observing the levels of innovation, value and persistence over time. The foundation of a venture is innovation (Drucker, 1985)—*new combinations* (Schumpeter, 1934), validated by objective (v. subjective) data supporting a *match with opportunities* in the marketplace (Hayek, 1937). Value in a venture appears at two levels: to the customer (as *net buyer benefit*), and to the venture itself (as *margins* and *volume*) (Ghemawat, 1991). The potential for the venture to persist over time can be observed through the *repetitive* and *long-term* purchase patterns that result from commitment (Ghemawat, 1991), and the adequacy of *resources* (McMullan & Long, 1990; Stevenson et al., 1994) needed for growth.

Authors in the strategy literature have argued that the strategic viability of a venture can be assessed by examining scarcity, non-appropriability, and flexibility. Scarcity in a venture curtails the two conditions that can extinguish opportunity—imitation and substitution (where, in the horizontal relationship among new entrants, rivals, and substitutes in an industry (Porter, 1980; Porter, 1985), imitation increases supply, and substitution decreases demand)—making *non-imitability* (Rumelt, 1987) and *non-substitutability* (Barney, 1991; Ghemawat, 1991) essential characteristics of viable ventures. Appropriability (Rumelt, 1987)—arising from *holdup* (Ghemawat, 1991; Williamson, 1985) (which re-distributes gains among economic actors, decreasing the size of the remaining pie slice to the company), and *slack* (Ghemawat, 1991) (which decreases the rents from a strategic position, making a smaller pie)—occurs in the vertical relationship, between suppliers and customers, and the venture. Viable ventures will have the tools in place to discourage appropriability—such as norms, bargaining, contracting, and posturing (Ghemawat, 1991) to reduce holdup, and the alignment of incentives (Rubin, 1990), or adjustments in governance (Williamson, 1991) to reduce slack—lest value once created, be plundered. Lastly, flexibility—the management of *uncertainty* and *ambiguity* to support and develop *core competence* and yield adaptive responses—results in the creation of adaptive organizations (Collins & Porras, 1995), lest: (1) changing environmental conditions which once supported the venture become its enemy, (2) selection FOR be replaced by selection AGAINST, and (3) inertial organizations become the dinosaurs of evolutionary economic history (Gersick, 1991; Gresov, Haveman, & Oliva, 1993; Romanelli & Tushman, 1994; Tushman & Romanelli, 1985).

Thus, as a sample set of new venture attributes, levels on the following variables are suggested to be related to venture viability. In summary, and as previously indicated above, these variables include: (1)

[69] A sample algorithm has been created and tested in a variety of settings, and it appears later in the discussion; but since this is not the only one possible, since improvements are continual, and since a digression into a discussion of the merits of such mathematical representations is not germane to the topic at hand, I shall simply refer the reader to other literature on this topic (Mitchell, 1995; Mitchell, 1998b; Wang, Tang, & Mitchell, 2001).

new combination, (2) product-market match, (3) net buyer benefit, (4) margins, (5) volume, (6) repetitive purchase, (7) long-term need, (8) resource availability, (9) non-imitability, (10) non-substitutability, (11) holdup, (12) slack, (13) uncertainty, (14) ambiguity, and (15) core competence. Thus, the identification of at least fifteen attributes of viable ventures as examples suggests the possibility of utilizing *venture viability templates* to identify and observe necessary venture characteristics.

Dependent variables—Some venture prototypes. As noted in the introductory chapter of this monograph, the outcome of enterprise creation processes is the subject of extensive discussion. A wide variety of outcomes have received attention in the literature. These include survival (Birch, 1988; Shapero & Giglierano, 1982), profitability (McMullan & Long, 1990, and others), employment growth (Box et al., 1993; Westhead, 1996), entrepreneur-perceived growth performance (business growth: market share, cash flow, sales; and volume growth: sales, earnings, net worth) (Chandler & Hanks, 1994), meeting goals or objectives (budget, staffing, deadlines, quality, product reliability, efficiency, customer satisfaction, service) (Nerkar et al., 1996), return on investment (Biggadike, 1979; Tsai et al., 1991), and market share gain (McDougall & Oviatt, 1996; Tsai et al., 1991). However, the measurement of performance in new ventures is a complex undertaking, with no commonly accepted lists of performance variables or methods by which new ventures are evaluated (Biggadike, 1979; McDougall & Oviatt, 1996). Thus, a combination of these outcomes should be utilized, if possible, to ensure that significant effects of venture attributes are detected.

FIGURE 5-3
Venture Prototype Categories Based Upon
Business and Strategic Strength

Strategic (Keeping) Strength **(K)**		Business Strength **(B)** LOW	Business Strength **(B)** HIGH
	HIGH	1. Long-term/ Lower Profit	2. Long-term/ Higher Profit
	LOW	3. Short-term/ Lower Profit	4. Short-term/ Higher Profit

Based upon the earlier discussion of venture attributes and the supporting literature review which follows in the next subsection, it seems possible to distinguish prototype ventures across two dimensions: business viability, and strategic viability. Among the previously reviewed outcomes that indicate venture viability, it is reasonable to assert that business viability is shown through profitability, and that strategic viability is demonstrated through the long v. short-term nature of the venture. In short, is it a business? And, can you keep it? Thus, four general categories of venture prototype can be represented as shown in Figure 5-3: Long-term/lower profit, Long-term/higher profit, Short-term/lower profit, and Short-term/higher profit.

And based on comprehensive case studies conducted over a period of years, 14 prototype firm innovation types have been proposed (Mitchell, 1998b): (1) hobby; (2) charity; (3) research project; (4) low competence; (5) buy-a-job small business; (6) life style; (7) high potential; (8) model venture; (9) struggling proprietary; (10) competence based troubled; (11) hostage; (12) competence based success; (13) technology; (14) fad. Analysis by scoring the firm on the foregoing 15 venture attributes can suggest a correlation between the analysis scores and the base score innovation types of a firm (Mitchell, 1995; Mitchell, 2001; Mitchell & Keng, 1998a; Mitchell & Keng, 1998b). Within the four general categories shown in Figure 5-3, various prototype business ventures may be grouped as follows:

Box 1 - Long-term/Lower Profit

- Charities
- Hobbies

Box 2 - Long-term/Higher Profit

- Lifestyle small businesses
- Competence-based unrealized-profit (troubled) entrepreneurial ventures
- Struggling proprietary businesses
- High-potential ventures
- Competence-based successful ventures
- Model ventures

Box 3 - Short-term/Lower Profit

- Research projects
- Low competence ventures
- Buy-a-job small businesses
- Hostage ventures

Box 4 - Short-term/Higher Profit

- Fads
- Technology-based successes (where the technology is rapidly changing)

Once mapped, our next task is to embark upon the process of making finer distinctions among the venture types in each of the four categories. This task begins with the narrative characterization, based upon an analysis of the prototype case for each type of venture in terms of the proposed venture characteristics that are expected to apply in each case.

Box 1 - Long-term/Lower Profit

Charity

When a venture lacks many of the elements that make it a business, but still has "staying power" in society, we generally find a charity. A charity is uneconomic without help because, though a long-term benefit to society there are insufficient volume and margins to make it a self-sustaining business. In this case, NBB might be medium to high, though there is insufficient volume and margins to make it a self-sustaining business evidenced prototype by low PMM. So we find as charities organizations that vary from opera and symphony companies to other community, educational, or religious groups that exist because they depend upon the "charity" of

society to make up the shortfalls that come from lack of profitable delivery of their product or service. In the venture area, we find as charities projects that are not yet businesses because they don't have sufficient appeal to generate the volume and margins that come with a clear PMM. To pursue such ventures means that they must be "fed" resources, because they do not generate enough on their own.

We may also observe that in a charity (1) the innovation level is immaterial to marketability, being insufficient to propel the product/service into profit-making status; (2) scarcity and appropriability are medium, due to weak economic standing; (3) uncertainty is medium due to community support, with ambiguity somewhere in the medium range due to the basically uneconomic nature of the profit-making lack in the organization.

Suggested preliminary coordinates: (B1/K5)

Hobby

Based on interest in an area that borders on or is "love," a hobby is a high core competence activity. Innovation levels for hobbies vary depending upon the individual and the hobby. Because of the uniqueness of each individual, imitability and appropriability are virtually non-existent and uncertainty and ambiguity are low.

But a hobby is NOT a business because there is no PMM, NBB, margin, volume, frequency, long-term need, or BUSINESS resources.

Suggested preliminary coordinates: (B1/K9)

Box 2 - Long-term/Higher Profit

Lifestyle Small Business

Some people prefer lifestyle to money, and choose the vehicle of a small business to get them there. For example, someone might want to live in a picturesque location and choose a venture that permits them this lifestyle choice, such as owning and operating a small hotel in a hamlet near the ocean.

A lifestyle small business depends upon purchase frequency and product longevity (e.g. the need for a bed and breakfast in a scenic location) for its viability. Some sacrifices are thus required in all other areas--trading money for "lifestyle." Especially important to the lifestyle small business, however, is the opportunity to vary the level of innovation and the level of imitability.

Suggested preliminary coordinates: (B5/K5)

Competence-based "Troubled" Venture

Somewhat like a "charity," the competence-based venture in trouble combines HIGH COMPETENCE with low PMM, margins, and volume, for something with a long-term need, in an environment of uncertainty and ambiguity. This venture is UNLIKE a charity in that innovation is high, as is scarcity—with substantial control of appropriability. Also, a PMM is possible in this type of venture.

Suggested preliminary coordinates: (B5/K7)

Struggling Proprietary

The struggling proprietary type venture experiences the paradox of being so closely held (i.e. having such unique core competence or proprietary secrets, etc.) that it fails to generate sufficient "business."

Hence in this type of venture, one might observe that all the "can you keep it?" variables (scarcity, non-appropriability, and flexibility) are high, while all the "is it a business?" variables (innovation, value & persistence) are lower—more in the medium range.

Examples of the struggling proprietary type of venture include the inventor- or engineer-based business that has a protected technology, but is not utilizing the technology to produce a fully commercial product.

Suggested preliminary coordinates: (B5/K9)

High Potential Venture

The high potential venture would be a venture with medium to high ratings in all categories and as such should be well balanced. By definition (under the "completeness" logic) there is room for improvement in each area.

Suggested preliminary coordinates: (B7/K7)

Successful Competence-based Venture

In this type of venture, high competency, accompanied by PMM, NBB, margins, volume, frequency of purchase, and the availability of resources indicate long-term success potential.

Medium product longevity implies increased ambiguity and medium scarcity, with a DECAYING level of innovation.

Suggested preliminary coordinates: (B9/K7)

Model Venture

When a venture is built so that each of the key elements is optimal, it is a model venture. This does not mean, however, that the venture is perfect. Instead, it means that the venture is optimally situated to fully take advantage of (1) venturer expertise, and (2) stakeholder support.

Suggested preliminary coordinates: (B9/K9)

Box 3 - Short-term/Lower Profit

Research Project

The research project is not a business, nor is it intended to be a business. Because this is research, by definition there is a lack of information, hence the answers to many of the sub questions will be "unknown." Yet an analysis of this type of project utilizing the criteria still reveals some interesting relationships. For example, ratings that show strong core competence and level of innovation explain some of the reasons that research may be stimulated. However, no

PMM (Product/market match) implies that this is NOT a business, and should not be treated, thought of, or managed as such.

Suggested preliminary coordinates: (B1/K1)

Low Competence Venture

The low competence venture is a trap. Because the inexperienced venturer can see a glimmer of each of the key elements of a venture, s/he often mistakenly assumes that with only a little bit of help this very weak project can be "turned around."

But sadly, this venture is "congenitally flawed." It is often the case that ventures that are formed with insufficient resources, or in environments (niches) that are tightly packed with rivals (Carroll & Hannan, 1989), PERMANENTLY bear the scars of their weak condition at founding. They are most likely to be "selected out" of the market (fail). Efforts to try and prolong their life most often tend to be futile. If life is prolonged, the venture tends to be a "grind" to operate.

Suggested preliminary coordinates: (B2/K2)

"Buy-a-job" Small Business

Though this business appears to be perilously close to the "low competence" venture, it is really substantially different. Whereas the low competence venture is weak in all areas, this prototype venture is strong in the "persistence" variables, of frequency and product longevity.

Yet it should be emphasized that this strength does NOT come from the entrepreneur, but rather is a feature of the marketplace. This is where the "self-employed" jobs fit in. Thus, anyone who operates a personal service small business might fit into this type of venture.

This type of venture is referred to as a "buy-a-job" small business because of its weaknesses, which lead to the mere substitution with a long-hours "grind" working for oneself (one low-paying customer at a time), as opposed for working for a company (one low-paying boss at a time). This is a useful "fall back" plan for times of high unemployment, but it is not entrepreneurial, because it does not create jobs or wealth for others.

In a buy-a-job venture, weak core competence implies low NC, low-scarcity, high hold-up, uncertainty and ambiguity with medium slack. Low innovation and medium PMM lead to low NBB and margins.

Suggested preliminary coordinates: (B3/K3)

Hostage Venture

All too often in venturing the circumstance arises where "talent" meets "power," and loses. The hostage venture possesses core competence, a new combination/product-market match with high net buyer benefit, purchase frequency and product longevity. But, due to high appropriability, margins are low, resources are few, volume is restricted, and ambiguity is high. Essentially, the hostage venture "makes it off the ground," only to be consumed in trying to redress an adverse small numbers bargaining (Williamson, 1985; Williamson, 1991) position.

In a hostage venture, supplier and buyer power (Porter, 1980; Porter, 1985) is uncontained. The venture is "held-up" by sole suppliers of critical components of the product or

service, or by sole purchasers (dominant customers). Hence, the size of the "slice" of the economic pie that remains for the venture is insufficient to permit the venture to achieve its full potential.

Suggested preliminary coordinates: (B5/K2)

Box 4 - Short-term/Higher Profit

Fad

A "fad" type venture is distinguished from other types of venture almost entirely by its lack of persistence over time. Quite often a fad-based venture can yield substantial profits--these profits are just limited-lived. Essentially in a fad, a strong core competence yields an improved product or service, with strong PMM, NBB, margins and volume, which in turn produce plentiful resources and low uncertainty. But, because scarcity is doubtful, and holdup almost certain given time, the longevity of the product/service is doubtful, hence ambiguity is high.

Suggested preliminary coordinates: (B9/K2)

Successful Technology-based Venture

The success of this type of venture comes from high levels of core competence, PMM, NBB, margins, volume, purchase frequency, long-term need, and access to resources. Ironically, the reason that it is not higher on the "keep it" axis stems from its source of strength: technology. And, since the pace at which many technologies change is rapid, levels of scarcity and non-appropriability erode as the "newness" of an initial "new combination" fades. Thus, this type of venture most likely will have medium levels of NC and ambiguity, supported by quite low levels of uncertainty (insurable risk).

Suggested preliminary coordinates: (B9/K5)

An application of the functional relationship. Now, based upon these characterizations, the base values on the independent variables (attributes) for the prototype ventures (using a 1 (Low) and 9 (High) Likert scale are shown in Table 5-1. Plotted on the **B** (x axis) and **K** (y axis) axes of Figure 5-2 produces the mapping of the prototype ventures shown in Figure 5-4. And further, the hypothesized values on the 15 venture attribute variables form the foundation for modeling the relationship between these attributes as independent variables, and the proposed venture prototypes as dependent variables. Thus, a sample algorithm is suggested as a first moment correlation that is proposed as a "difference statistic," which can facilitate the comparison of ratings on the 15 venture attributes with a set of prototype ventures:

FIGURE 5-4
Preliminary Mapping of Venture Prototypes
As a Function of Venture Attribute Criteria

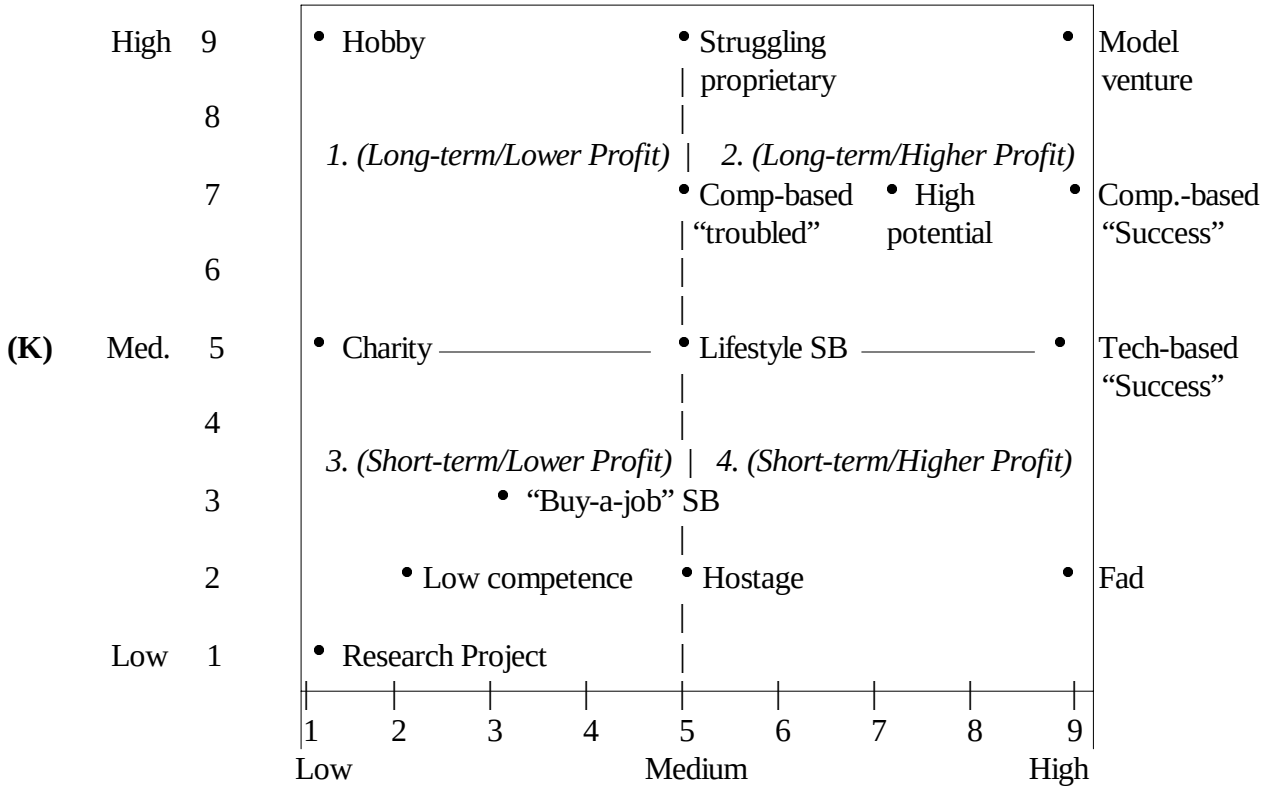


TABLE 5-1

Proposed Initial Values for

A Venture Development Model

	B1/K	**B2/K**	**B5/K**	**B9/K**	**B3/K**	**B1/K**	**B5/K**	**B9/K**	**B7/K**	**B9/K**	**B1/K**	**B5/K**	**B5/K**	**B9/K**
1.	1-9	2	9	5	1	1-9	5	5	7	8	1-9	6-9	9	9
2.	1	2	9	9	5	1	5	9	7	9	1	5	3	9
3.	0	2	9	9	1	6-9	5	9	7	9	1	5	6-9	9
4.	0	2	1	9	1	1	5	9	7	9	1	5	1	9
5.	0	2	5	9	1	1	5	9	7	9	1	5	1	9
6.	0	2	9	5	9	1-5	5	9	7	9	0	5	5	9
7.	0	2	9	1	9	9	5	9	7	5	1	5	9	9
8.	0	2	5	9	5	1	5	9	7	9	1	5	5	9
9.	0	2	5	1	1	5	5	5	7	5	9	9	8	9
10.	0	2	5	1	1	5	5	5	7	5	9	9	9	9
11.	0	2	1	1	1	5	5	5	7	9	9	9	5	9
12.	0	2	1	5	5	5	5	5	7	5	9	9	5	9
13.	0	2	5	9	1	5	5	9	7	5	9	9	1	9
14.	0	2	1	1	1	5	5	5	7	1	9	9	1	9
15.	9	2	9	1	1	9	5	9	7	9	9	9	9	9

$$R_{(k)} = 1/N_{(k)} \Sigma\{1/(ABS(Hk(j) - A(j)) + 1)\}^{1/2}$$

Where:

$Hk(j)$ = the hypothesized level of variable j for prototype k

$A(j)$ = the rater-assessed level of variable j as it applies to the venture under evaluation

$N_{(k)}$ = the total number of variables (attributes) in prototype k

$R_{(k)}$ = the first moment correlation (difference statistic) between prototype k and the venture under evaluation

And:

Σ = summation for j=1 to N

ABS = absolute value

This difference statistic may be described as a three-dimensional overlap first moment correlation, wherein two sets of variables (namely, rater-assessed values and hypothesized prototype values) have zero covariance due to a simplifying assumption that the hypothesized values—as constant points of comparison—are invariant. This correlation differs from the more commonly understood Pearson Product Moment Correlation, which—as a second moment correlation—applies to circumstances when significant covariance applies to two or more sets of data.

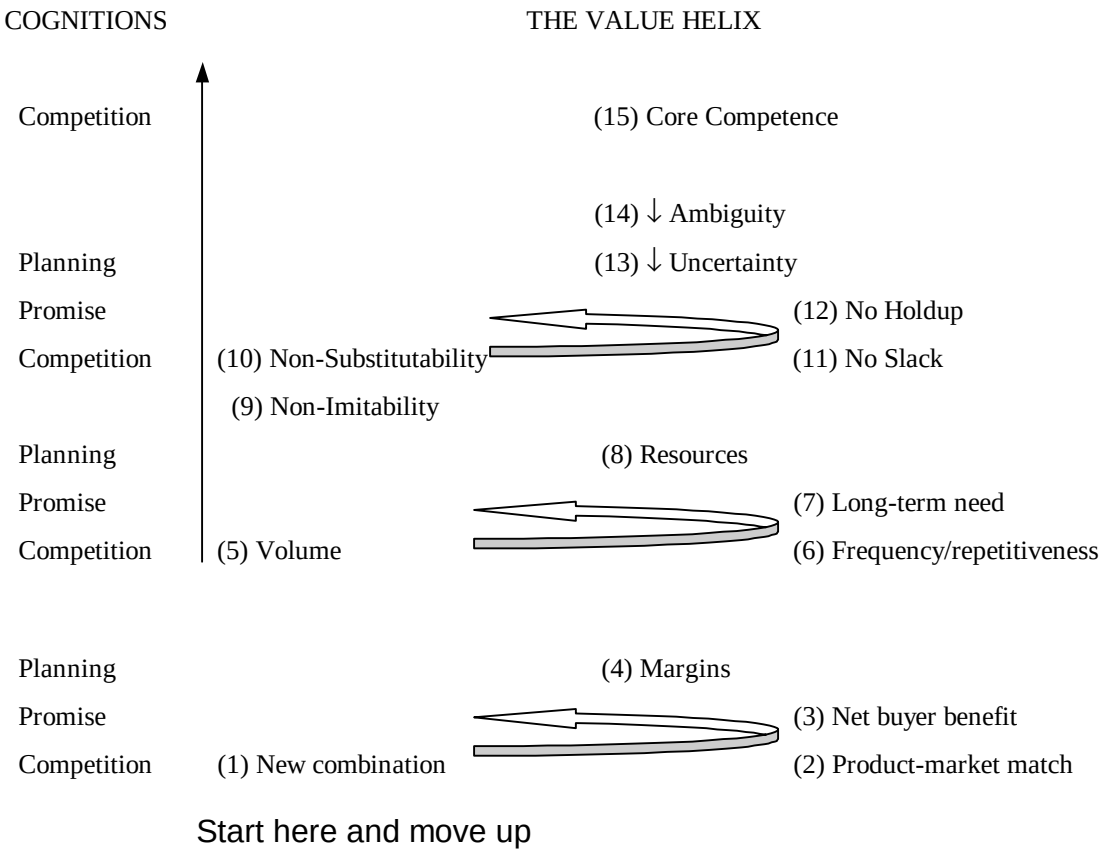
This cross-correlation method is self-normalizing. Exact sample matches with respect to a particular hypothesized profile thus produce unity correlation (i.e. 1.000). Calibration of the remaining distances is interval scaled based upon a Likert scale with a dynamic range of 1 - 9. With 1 - 9 dynamic range resolution driving the fundamental Euclidean spacing of the algorithm, an inverse square root weighting is applied directly with a coefficient of one. (As a reasonableness test of face validity, a Euclidian distance of 7 results in a weight of 0.378, a common criterion for non-coherence testing.)

Summary. In the foregoing subsections the analytical framework and the conceptual content of a model that can be implemented using computer technology has been described. Fourteen case studies as outcome variables, and 15 venture attributes as independent variables, along with a sample algorithm that relates the two have been presented. In the final subsection I explore the link between the independent variables (venture attributes) and Transaction Cognition Theory, once again demonstrating how the concept of the Value Helix applies at the firm level of analysis.

Link to the Value Helix and Transaction Cognition Theory

In Chapter 2, I developed the idea that the utilization of planning, promise, and competition cognitions in practice, actually follows a standard pattern: competition, promise, and planning cognitions. In the development of the criteria utilized in the preceding demonstration analysis of the practicality of developing expert assistance information technology, 15 variables were proposed to be illustrative of salient venture attributes for use in practice. Interestingly, these attributes, when analyzed according to the Competition, Promise, Planning pattern, appear also to follow the Value Helix format—in this case three full revolutions—as shown in Figure 5-5.

FIGURE 5-5: The Value Helix in a
Sample Firm Level Venture Template Assessment Process



3x

The relationships illustrated in Figure 5-5 are important to the development of educational models, because they further illustrate the path to the development of pedagogy at the firm level of analysis.

Chapter 5: Concluding Remarks

Using Transaction Cognition Theory as a foundation, the objective of Chapter 5 has been to explore the relationship between education and the achievement of high performance economic results. After a discussion of educational philosophy in which I argued: (1) that the cognitive systems of individuals are more directly related to the achievement of high performance economic results than are personal attributes, and (2) that recent theory and empirical results make it possible to further push the line of demarcation from the inexplicable in economic performance, toward the scientifically explicable, the two main sections of the chapter were introduced. In Section 5-1, through the introduction of a cognitively based General Model of Expertise/Skill Acquisition (Figure 5-1), education and high performance economic results were shown to be related. In Section 5-2 the educational model introduced in Section 5-1 was applied to both market and non-market teaching situations, and to the creation of expert assistance technology.

The foregoing chapters have developed theory and have outlined present applications. In the next and final chapter, some of the possibilities created by these ideas are explored.

CHAPTER 6

POSSIBILITIES

"The best thing a society can do to increase its prosperity is to wise up."

(Olson, 1996)

The late Mancur Olson's statement speaks directly to the original question posed in this monograph: Why do some people, or groups of people, achieve high performance economic results while others do not? and it echoes psychologist William James (1890) suggestion that "we become what we think about." "Wising up" to increase prosperity, is about better thinking.

In the preceding chapters of this monograph I have explored the relationship between the attainment of high performance economic results and human thought—specifically how transaction cognitions, the economic thought patterns that I have introduced in this monograph, relate to the process of achieving high performance economic results. I have suggested that transaction cognitions create the necessary information for us to better utilize the social frictions of economic transacting, in the value creation process (Chapter 2), at multiple levels of analysis (Chapter 3), in better understanding global entrepreneurship (Chapter 4), and in the creation of effective educational models (Chapter 5). In this sixth chapter, we explore together the possibilities to better utilize social friction to increase prosperity.

I hope that I have argued persuasively herein that Transaction Cognition Theory provides a rigorous development of three teachable cognitively based mental models (planning, promise, and competition cognitions, as independent variables) that can be related at multiple levels of analysis to the achievement of global high performance economic results (as a critical dependent variable at this time in our economic history). Thus, in Section 6-1, I summarize the "state of play" in high performance economic results as I see it. In Section 6-2, I present several considerations for future gains in high performance economic results centered around two subsections: (6-2.1) Considerations for organizing some of the necessary research, and (6-2.2) Considerations for the organization of dissemination and implementation initiatives. Section 6-3 concludes the monograph.

Section 6-1: The Present "State of Play" in High Performance Economic Results

Within this monograph, I have—as the occasion has demanded—cited a variety of research in support of the arguments made. This section of Chapter 6 draws these threads together, along with supplemental information to help us, in brief, to conceptualize the present state of play in high performance economic results and the related transaction cognitions. Consistent with the multi-level approach utilized throughout, this summary covers the transaction, individual, firm, industry, economy, and society levels of analysis; but this time starts at the economy and society levels—which, as noted in the introductory chapter, can most clearly communicate the world wide status—as built upon the lower levels of analysis—in the achievement of high performance economic results. In this evaluation, then, the implications for the state of play at progressively fine-grained levels of analysis: economy/society, industry, firm, individual and transaction are discussed.

Economy and Society

As noted earlier in the monograph, at the economy level, economic results have quite standardized definitions, mainly centering around Gross Domestic Product (GDP), per capita GDP,

GDP growth, and standard of living measures (although I have argued previously that standard of living is more properly a society level outcome). At the economy level of analysis high performance economic results appear to have the widest variability, and through highlighting differences, provides a starting point for a discussion of the present state of affairs.

Economies may be categorized into quartile-based "tiers" that stratify economies according to the above measures, and highlight variances. At the economy level of analysis, the economic tier-based "have" and "have not" comparisons among the economies of the world are striking, as illustrated in the 1998 mean per capita GDP, population, and GNP statistics reported in Table 6-1.

TABLE 6-1

1998 (US$) World Economic Statistics[A]

Ranked in Quartiles by Country

Description	Mean per Capita GDP	Population (millions)	Pop. %	GNP (est.) (billions)	GNP % (est.)	Purchasing Power Parity GNP (est.) (billions)	PPP[B] % (est.)
Average/Totals 1st Quartile	$19,737	848.2	14.4	$20,890	73.0	$19,122	52.7
Average/Totals 2nd Quartile	3,933	1,002.1	17.1	5,221	18.2	7,953	21.9
Average/Totals 3rd Quartile	1,103	2,136.4	36.4	1,771	6.2	6,216	17.1
Average/Totals 4th Quartile	279	1,887.1	32.1	726	2.5	3,024	8.3
Average/Totals	$6,263	5,873.8	100.0	$28,607	100.0	$36,315	100.0

Sources:

United Nations Statistics Division http://www.srch0.un.org 9/21/00

World Bank: World Development Indicators 2000 www.worldbank.org/data/wdi2000/worldview.htm 4/16/01

Encyclopedias Britannica and World Book

(Note A: Some estimates computed where data were scarce.)

(Note B: Purchasing Power Parity (PPP) GNP is gross national product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GNP as a U.S. dollar has in the United States.)

Illustrated in the table are economic results which indicate that a large proportion of the world is not presently (1998) achieving high performance economic results. As shown, economies in the first quartile, representing 1/7 of the world's population (14.4 %), produced over 50 percent of its purchasing power (52.7%), while economies in the third and fourth quartiles, with over 2/3 of the world's population (68.5%), produced only 25 percent of world purchasing power. Naturally this has dramatic implications for society.

At the society level, high performance economic results are most clearly manifest in standard of living outcomes. Although high performance at the society level may include factors that are not necessarily all economic in nature (e.g. the quality of art, or satisfaction from religious observance, etc.); it can certainly be argued that the combined economic performance of a society is a necessary and fundamental pillar that supports a given standard of living. (Thus, for example, in the first tier, only 7 of every 1000 children die before age 5; but in low-income economies more than 90 such children die (WorldBank, 2000)—an infant/child mortality rate that is a multiple of 12 times higher. This circumstance alone drastically lowers an important element in the standard of living for 83 poor families: affecting the quality of life for 300 to 500 people in every 1000, depending upon family size.)

The country-by-country detail for the totals shown in Table 6-1 is reported in Table 6-2, and additional data are available in Appendix 2 (WorldBank, 2000: Table 1.1). These data in the aggregate are overwhelming in documenting the need for enhancing planning, promise, and competition cognitions. An implicit assumption in the underlying premise of this monograph—that we become what we think about—is that if the "becoming" results are unsatisfactory, that the cognitions that have given rise to these results are to be examined first for suggestions as to improvement possibilities. Cognitions at the economy and society levels of analysis are therefore the first place to look for the reasons behind a given set of economic and societal results.

TABLE 6-2
1998 Economic Statistics (US$) by Economy
Ranked in Quartiles based on Total Number of Countries

	ECONOMY	$GDP	POP	GNP	PPP GNP
	First Quartile				
1	Luxembourg	43,475	0.4	16.4	
2	Bermuda	38,652	0.1	2.8	
3	Leichtenstein	35,910	0.0	1.0	
4	Switzerland	35,910	7.0	284.1	191.0
5	Norway	33,203	4.0	152.0	116.0
6	Denmark	33,085	5.0	175.2	126.0
7	United States of America	31,059	270.0	7903.0	7904.0
8	Japan	29,956	126.0	4089.1	2982.0
9	Iceland	29,946	0.3	8.1	
10	Finland	27,934	5.0	125.1	106.0
11	Sweden	26,790	9.0	226.5	176.0
12	Germany	26,183	82.0	2179.8	1807.0
13	Ireland	26,098	4.0	69.3	67.0
14	Austria	25,911	8.0	216.7	187.0
15	Netherlands	24,956	16.0	389.1	350.0
16	Belgium	24,692	10.0	259.0	241.0
17	Hong Kong SAR	24,581	7.0	158.2	139.0
18	Singapore	24,577	3.0	95.5	80.0
19	Monaco	24,481	0.0	0.7	
20	United Kingdom	23,934	59.0	1264.3	1200.0
21	Italy	20,659	58.0	1157.0	1173.0
22	San Marino	20,407	0.0	0.5	
23	United Arab Emirates	19,506	3.0	4.7	51.0
24	Canada	19,439	30.0	580.9	691.0
25	Qatar	18,065	0.6	10.5	
26	Israel	17,041	6.0	96.5	101.0
27	French Polynesia	15,900	0.2	3.2	
28	New Caledonia	14,647	0.2	3.0	
29	Puerto Rico	14,488	4.0	58.0	
30	New Zealand	13,985	4.0	55.4	61.0
31	Spain	13,972	39.0	555.2	628.0
32	Kuwait	13,946	2.0	27.9	
33	Netherlands Antilles	13,827	0.2	2.7	
34	Brunei Darussalam	13,719	0.3	4.3	
35	Andorra	13,166	0.1	0.9	
36	Martinique	11,866	0.4	4.3	
37	Cyprus	11,631	0.8	8.8	
38	Greece	11,463	11.0	123.4	147.0
39	Bahamas	11,395	0.3	3.3	
40	Portugal	11,080	10.0	106.4	145.0
41	Guadeloupe	10,591	0.3	3.8	
42	Reunion	10,513	0.7	7.3	
43	Iraq	10,195	22.0	224.3	
44	Slovenia	9,798	2.0	19.4	29.0
45	Bahrain	9,684	0.6	6.1	
46	Antigua and Barbuda	9,370	0.0	0.3	
47	Malta	9,110	0.4	3.3	
48	French Guiana	9,094	0.1	0.7	
49	Barbados	8,717	0.3	2.3	
50	Argentina	8,257	36.0	200.3	424.0
	Second Quartile				
51	Saint Kitts and Nevis	7,440	0.0	0.3	
52	Seychelles	7,378	0.1	0.6	
53	Saudia Arabia	7,259	21.0	143.4	218.0
54	Korea (Republic of)	6,956	46.0	398.8	616.0
55	Palau	6,448	0.0	0.1	
56	Uruguay	6,333	3.0	20.0	28.0
57	Oman	5,946	2.0	11.9	
58	Libyan Arab Jamahiriya	5,930	5.0	29.7	
59	Czech Republic	5,486	10.0	53.0	126.0
60	Lebanon	5,326	4.0	15.0	17.0
61	Chile	4,921	15.0	73.9	126.0
62	Gabon	4,787	1.0	4.9	7.0
63	Croatia	4,758	5.0	20.8	30.0
64	Syrian Arab Republic	4,757	15.0	15.5	41.0
65	Brazil	4,673	166.0	767.6	1070.0
66	Hungary	4,644	10.0	45.7	99.0
67	Trinidad and Tobago	4,622	1.0	5.8	9.0
68	Cook Islands	4,521	0.0	0.1	
69	Mexico	4,324	96.0	368.1	714.0
70	Venezuela	4,107	23.0	82.1	133.0
71	Poland	4,096	39.0	151.3	292.0
72	Saint Lucia	4,081	0.2	0.6	
73	Slovakia	3,787	5.0	19.9	52.0
74	Mauritius	3,727	1.0	4.3	10.0
75	Estonia	3,682	1.0	4.9	11.0
76	Dominica	3,630	0.1	0.3	
77	South Africa	3,404	41.0	136.9	343.0
78	Malaysia	3,317	22.0	81.3	171.0
79	Panama	3,287	3.0	8.3	14.0
80	Turkey	3,071	63.0	200.5	419.0
81	Botswana	3,069	2.0	4.8	9.0
82	Grenada	2,997	0.1	0.3	
83	Lithuania	2,895	4.0	9.4	23.0
84	Iran	2,850	62.0	102.2	317.0
85	Saint Vincent/Grenadines	2,815	0.1	0.3	
86	Costa Rica	2,793	4.0	9.8	20.0
87	Belize	2,741	0.2	0.6	
88	France	2,739	59.0	1465.4	1248.0
89	Jamaica	2,707	3.0	4.5	9.0
90	Latvia	2,638	2.0	5.9	14.0
91	Peru	2,521	25.0	60.5	104.0
92	Columbia	2,515	41.0	100.7	239.0
93	Suriname	2,454	0.4	1.0	
94	Cuba	2,194	11.0	24.1	
95	Tunisia	2,138	9.0	19.2	48.0
96	Australia	2,125	19.0	387.0	409.0
97	Fiji	1,982	0.9	1.7	
98	El Salvador	1,941	6.0	11.2	24.0
99	Russian Federation	1,936	147.0	331.8	907.0
100	Dominican Republic	1,925	8.0	14.6	36.0
	Third Quartile				
101	Thailand	1,890	61.0	131.9	338.0
102	Micronesia, Fed. States of	1,841	0.1	0.2	
103	Namibia	1,834	2.0	3.2	9.0
104	Guatemala	1,760	11.0	17.8	38.0
105	The FYR of Macedonia	1,753	2.0	2.6	8.0
106	Romania	1,698	23.0	30.6	125.0
107	Algeria	1,689	30.0	46.4	137.0
108	Paraguay	1,629	5.0	9.2	23.0
109	Ecuador	1,620	12.0	18.4	37.0
110	Tonga	1,614	0.1	0.1	
111	Marshall Islands	1,509	0.1	0.1	
112	Bulgaria	1,470	8.0	10.1	39.0
113	Liberia	1,458	3.4	5.0	
114	West Bank and Gaza	1,433	3.0	4.3	
115	Kazakhstan	1,368	16.0	20.9	67.0
116	Belarus	1,360	10.0	22.3	65.0
117	Maldives	1,350	0.3	0.4	
118	Morocco	1,302	28.0	34.4	89.0
119	Jordan	1,280	5.0	5.3	12.0
120	Swaziland	1,279	1.0	1..235	
121	Vanuatu	1,276	0.2	0.2	
122	Samoa	1,255	0.2	0.2	
123	Egypt	1,211	61.0	79.2	193.0
124	Nigeria	1,153	121.0	36.4	89.0
125	Yugoslavia	1,124	11.0	12.4	
126	Cape Verde	1,085	0.4	0.4	
127	Georgia	974	5.0	5.3	19.0
128	Albania	972	3.0	2.7	10.0
129	Philippines	894	75.0	78.9	280.0
130	Cote d'Ivoire	889	14.0	10.2	21.0
131	Honduras	870	6.0	4.6	14.0
132	Sri Lanka	848	19.0	15.2	55.0
133	Guyana	846	0.9	0.7	
134	Ukraine	834	50.0	49.2	157.0
135	Djibouti	800	0.5	0.4	
136	China	777	1239.0	923.6	3779.0
137	Papua New Guinea	756	5.0	4.1	10.0
138	Solomon Islands	712	0.3	0.2	
139	Cameroon	702	14.0	8.7	20.0
140	Congo (Rep.)	691	3.0	1.9	2.0
141	Kiribati	594	0.1	0.1	
142	Turkmenisatn	582	5.0	2.9	
143	Zimbabwe	548	12.0	7.2	29.0
144	Azerbaijan	537	8.0	3.8	17.0
145	Armenia	533	4.0	1.7	8.0
146	Angola	528	12.0	4.6	12.0
147	Afganistan	523	26.0	13.6	
148	Senegal	518	9.0	4.7	12.0
149	Guinea	515	7.0	3.8	12.0
150	Indonesia	478	204.0	130.6	490.0
	Fourth Quartile				
151	Uzbekistan	470	24.0	22.9	49.0
152	Pakistan	458	132.0	61.5	217.0
153	Haiti	443	8.0	3.2	11.0
154	Nicaragua	442	5.0	1.8	9.0
155	Korea (Dem. P. Rep.)	430	23.0	9.9	
156	Lesotho	425	2.0	1.2	5.0
157	India	422	980.0	427.4	2018.0
158	Zambia	413	10.0	3.2	7.0
159	Benin	399	6.0	2.3	5.0
160	Mongolia	384	3.0	1.0	4.0
161	Equatorial Guinea	377	0.4	0.2	
162	Republic of Moldova	374	4.0	1.7	9.0
163	Kenya	373	29.0	10.2	28.0
164	Kyrgystan	366	5.0	1.8	11.0
165	Gambia	355	1.0	0.4	2.0
166	Yemen	354	17.0	4.6	11.0
167	Uganda	347	21.0	6.6	22.0
168	Ghana	346	18.0	7.3	32.0
169	Togo	344	4.0	1.5	6.0
170	Viet Nam	336	77.0	26.5	129.0
171	Mauritania	328	3.0	1.0	4.0
172	Comoros	305	0.5	0.2	
173	Sudan	305	28.0	8.2	35.0
174	Bangladesh	299	126.0	44.2	177.0
175	Central African Republic	296	3.0	1.1	4.0
176	Myanmar	282	44.0	12.4	
177	Cambodia	255	11.0	2.9	14.0
178	Mali	254	11.0	2.6	7.0
179	Lao People's Dem.Rep.	250	5.0	1.6	8.0
180	Rwanda	225	8.0	1.9	
181	Burkina Faso	221	11.0	2.6	9.0
182	Tajikistan	219	6.0	2.3	6.0
183	United Rep. of Tanzania	213	32.0	7.2	16.0
184	Eritrea	210	4.0	0.8	4.0
185	Sao Tome and Principe	210	0.1	0.0	
186	Madagascar	208	15.0	3.7	11.0
187	Bhutan	199	0.7	0.2	
188	Nepal	197	23.0	4.9	27.0
189	Bolivia	177	8.0	8.0	18.0
190	Somalia	177	7.2	1.3	
191	Bosnia-Herzegovina	161	4.0	0.6	
192	Niger	159	10.0	2.0	7.0
193	Malawi	156	11.0	2.2	6.0
194	Sierra Leone	154	5.0	0.7	2.0
195	Chad	150	7.0	1.7	6.0
196	Ethiopia	107	61.0	6.2	35.0
197	Burundi	103	7.0	0.9	4.0
198	Guinea-Bissau	100	1.0	0.2	1.0
199	Dem. Rep. Of the Congo	98	48.0	5.4	35.0
200	Mozambique	92	17.0	3.5	13.0

Sources:

United Nations Statistics Division http://www.srch0.un.org 9/21/00
World Bank: World Development Indicators 2000 www.worldbank.org/data/wdi2000/worldview.htm 4/16/01
Encyclopedias Britannica and World Book
(Note: Some estimates computed where data were scarce.)

Earlier, in Chapter 3, I developed the idea that representative sets of cognitions might be identified at each level of analysis, which can then provide insights into the achievement of high performance economic results. Table 3-4 suggests a set of representative cognitions for both the economy and society levels of analysis, as replicated in Table 6-3.

TABLE 6-3

(Excerpt from Table 3-4)

Examples of Transaction Cognitions

At the Economy and Society Levels of Analysis

Level/Cognition	Planning	Promise	Competition
Economy (Thompson, 1989)	Fiscal Policy Cognitions	Monetary Policy Cognitions	Structural Competition Cognitions
Society (Mitchell, 1992)	Productivity Cognitions	Trust Cognitions	Value Cognitions

So if we are to adequately assess the state of play at the economy and society levels, we must begin by attempting to relate underperformance to the underlying cognitive map: the lack of planning, promise, and/or competition cognitions, or the surfeit of fatalism, refusal, and/or dependency cognitions. While it may not be politically correct to suggest it, I argue that progress toward prosperity in many countries in the second, third, and fourth quartiles, is linked to a revision of the systems that give rise to these cognitive deficits[70]. Thus, for example, one could examine fiscal, monetary, and structural competition policy within a given economy in light of the standards set forth by Thompson (1989), to determine the source of economic underperformance. Or, one could examine the productivity, trust, and value cognitions within a given society in light of Mitchell (1992) to ascertain areas where new or revised institutions ought to be considered.

However, this monograph has not been written to resolve the foregoing issues, but to raise them, and thereby to stimulate additional research and policy-making attention. Accordingly, I call for the research necessary to relate the impacts of transaction cognitions at the economy and society levels of analysis to economies and societies of interest to researchers and policy makers. I have every reason to expect that the outcome of such analyses will be an enhanced capability to define the meaning of "wising up" to enhance prosperity.

Industry

At the industry level as defined by analysts, high performance economic results have been closely watched and evaluated (Porter, 1980; Porter, 1985; Rumelt, 1987). As noted in Table 6-4,

[70] IMPORTANT NOTE: A cognitive deficit as defined herein refers to the presence or absence of the "hardware" and "software" of the cognitive system, which is primarily created through deliberate practice. It does NOT refer in any manner to native intelligence, IQ, or any other stereotypical descriptor.

while industry performance has been found to vary between industries, the key variations occur within industries.

TABLE 6-4

Results of Variance Components Analysis

of Return on Capital for Sample of 1,292 U.S. Corporations

Rumelt (1987: 141)

	Industry Definition	
	3-digit	4-digit
Variance due to industry effects	3.9	4.7
Variance due to firm effects within industries	19.2	17.6

This observation has two implications for high performance economic results: (1) the idea that, if variations among industries are small, then the reason for lower performance results may rest with the absence of these industry markets entirely—that the mechanisms for creating the wealth simply do not exist in these economies (Olson, 1998), and (2) the idea that the foundation of industry performance is firm performance, which (as noted in the following subsection) is unacceptably low for new firms, and which (according to the variances reported in Table 6-4) contains a consistent proportion of weaker established firms.

Missing Industries

Which industries are missing within a given economy? And which transaction cognitions are implicated in such deficits? A recent paper by policy makers in China suggests that the reasons for the relative absence, for example, of the venture capital industry in one of the fastest growing economies in the world is related to "absence of laws and regulations, lack of effective exit mechanisms, lack of qualified investors, that services provided by support institutions cannot meet market demand, the lack of talented managers, and that ventures have no clear property rights and hence cannot operate normally" (Fensterstock & Li, 2001: 3-4), which, consistent with a compositional model (Rousseau, 1985), and as noted in Chapter 5, implicate planning, promise, and competition cognitions at the society level of analysis. Further, I interpret Olson's (1998)

suggestion—that poverty in Africa is related to the absence of entire categories of markets—to support this assertion.

Christensen (1997) suggests that successful product/service attribute prioritization is critical if industries are to remain in existence, which I have suggested in Chapter 3 requires competition cognitions at the industry level of analysis. Christensen suggests further that a clear understanding of the value of such attributes and their application to meeting the changing needs of customers is also critical to the continued health of firms within industries, and in Chapter 3 I have suggested that accomplishing this requires promise cognitions. Finally, Collins and Porras (1995) have suggested that firms within industries succeed through planning that yields structural flexibility and adaptability. Thus, where entire industries are missing, Transaction Cognition Theory suggests an examination of the cognitive stock (effective levels) of attribute prioritization, value and application, and flexibility cognitions.

Low Firm Performance Within Industries

Whether the effective levels of attribute prioritization, value and application, and flexibility cognitions within an industry are low or not, Rumelt's (1987) analysis reveals that there are some firms within every industry, where there will likely be a paucity of these cognitions. How can these firms be identified? And, how can the cognitions requisite at the industry level of analysis be acquired?

One of the roles of the often-maligned multinational corporations is to redress this deficiency within various markets. Cross-market analysis within industry, which is an essential informational task within the multinational domain, can reveal performance variations by market and using Transaction Cognition Theory, ought to be able to suggest the development of effective levels of the requisite cognitions. Of course, other supra-national organizations (IMF, UN, WTO, The World Bank) can also offer such analysis and recommendation capabilities that lead—through the enhancement of industry level transaction cognitions—to the enhancement of high performance results within industries globally.

Firm

In an increasingly global economy, then, the creation of high performing firms also plays a vital role. These firms contribute by producing growth, new jobs, increased trade, and the accelerated generation, dissemination and application of innovative ideas (Arzeni, 1998: 18; Bates & Dunham, 1993; McDougall & Oviatt, 1997: 293). However, the measurement of performance at the firm level has been recognized to be a complex undertaking, with no commonly accepted definitions of high performance, or methods by which firms should be evaluated (Biggadike, 1979; McDougall & Oviatt, 1996). We do know that presently, of the proportion of individuals who do engage in entrepreneurship, a significant proportion fail (50 to 80 percent depending upon analysis technique) (Cooper et al., 1988; Kanter et al., 1990: 424; McMullan & Long, 1990; Shapero & Giglierano, 1982). As noted earlier in Chapter 5, if these high failure rate statistics were to be reported as the production results of an assembly line, or for infant mortality, they would be rejected as entirely unacceptable. So why do we accept/tolerate them in firm formation?

The state of high performance economic results achievement is unacceptable within the first economic tier, and research indicates that it is not yet fully developed within the transition economies either (Fensterstock & Li, 2001). The results reported in Tables 6-1 and 6-2 suggest that firms, as

engines of progress (Kanter et al., 1990) and as the lower analysis-level foundation for economy-level results, are not in good health in the remainder of the second through fourth economic quartiles either. We have not yet achieved high performance economic results at the firm level. What does Transaction Cognition Theory suggest?

Recently published research suggests that Arrangements (planning), Willingness (promise), and Opportunity-Ability (competition) cognitions are related to the venture creation decision in a variety of countries on the Pacific Rim (Mitchell et al., 2000), and that as a result, potential earning gaps can be expected generally (Zhang, 2000). Thus, if one were to assume that (unaided) the distribution of entrepreneurial ability and the distribution of the wealth necessary to best utilize that ability in a population are not symmetric (rich people are not necessarily high-ability and high ability people are not necessarily rich) then there inevitably exist two earning gaps: one between different provides of capital, and the other between different abilities (2000: 186). In the simplest static model, these gaps provide incentive for both ability and capital to look for possible cooperation with each other (ibid.). But what if the model were not static?

Resource-based theory suggests a dynamic model that treats given levels of ability or wealth as stocks, or pools of resources, which are continually adjusted by flows of resources into and out of the pool (Dierickx & Cool, 1989). Assuming that the pool of entrepreneurial ability and investable wealth begin at some stock level, then Transaction Cognition Theory suggests (Chapter 5) that the (individual/firm) cross-level construct entrepreneurial ability may be enhanced through deliberate practice (a flow) thus changing the stock level and making cooperation more likely because increased ability is expected to prompt increasing levels of search behavior in high ability individuals (Zhang, 2000: 186). Accordingly, evaluation at the individual level of analysis is also required.

Individual

Earlier I defined high performance economic results at the individual level of analysis to consist of "some improvement upon a foundation economic independence/the attainment for an individual, of economic independence: the accomplishment of transactions sufficient to ensure provisions in store for the conceivable future." Within first tier economies, we see that only a small percentage of individuals engage in independent transacting. Data also show that roughly 90% of the U.S. labor force, for example, at any given point in time is not involved in entrepreneurship (Evans & Leighton, 1986); and that approximately 80% of individuals spend their entire careers in job employment (Steinmetz & Wright, 1989). Within the other tiers, the statistics are bleaker, with very few individuals having the necessary access to the necessary provisions in store for an uncertain future (Yunus, 1998). At the individual level of analysis, the level of high performance economic results is unacceptably low.

The possibilities that derive from Transaction Cognition Theory for redressing this low level of economic results revolve around the stimulation of the necessary planning, promise, and competition cognitions. Once again, an excerpt from Table 3-4 summarizes sample cognitions that I propose are related to high performance economic results at the individual level of analysis. As I have noted previously, the "opportunity" level of analysis also relates to the individual's cognitive map for the creation of new enterprise.

TABLE 6-5

(Excerpt from Table 3-4)

Examples of Transaction Cognitions

At the Individual Level of Analysis

Level/Cognition	Planning	Promise	Competition
Opportunity	Alertness Cognitions (Kirzner, 1997)	Product/Market Match Cognitions (Mitchell, 1995)	Technology Conversion Cognitions (Shane & Venkataraman, 2000)
Individual (Vesper, 1996)	• Planning/Fncg. Cognitions • Opns./Growth Cognitions	• Screening Cognitions • Start-up Cognitions	• Searching Cognitions • Set-up Cognitions

Chapter 5 has provided in some detail the implications of Transaction Cognition theory for the enhancement of entrepreneurial expertise using the deliberate practice model. Unacceptably low stocks of transaction creators at the individual level of analysis need not remain so. And with increased levels of entrepreneurial ability come higher performance economic results at the individual level of analysis—further building a foundation for the dramatically improved macro outcomes that are possible. But—as I have also argued—at the core of high performance economic results are transactions, which begin with transaction creators—often individuals—but are founded in transactions themselves. What, therefore, is the state of play at this level of analysis?

Transaction

At the transaction level of analysis, the question of high performance is simple: Are all of the wealth-creating transactions that could occur, actually occurring? The answer, of course, is: No, but the obvious weakness in the question is that the term "all" is undefined, and at present indefinable. Perhaps a better question, then, is: Are we satisfied with the present proportion of potential transactions that occur v. fail? I know that I am not, and I hope that in this review of the state of play in the area of high performance economic results I have been persuasive enough that you, the reader, are unsatisfied with the current state of play as well. What does Transaction Cognition Theory suggest to improve matters?

The essential argument in this monograph suggests that we apply a simple set of propositions to better utilize the transaction costs that are coincident to all transacting. At the transaction level of analysis the attributes (BR, O, S) of the transacting elements (transaction creators, other persons, and the work) are thought to influence transaction costs, which in turn affect economic outcomes. Recalling the physics metaphor, we can summarize the argument using the friction analogy: The nature of the surface, affects friction levels, which affects effectiveness. Transaction Cognition Theory suggests that changes to the level of the attributes of the transacting environment (the surface) that are made by the application of transaction cognitions, should result in a change the economic result outcomes, because changing the level of transaction cognitions enables the capability to change social frictions so that unproductive economic situations can be transformed into

productive ones (transforming slippage to glide or traction, and drag to glide or traction). These proposed linkages are illustrated in Figure 6-1.

FIGURE 6-1

Transaction Cognition Theory

Proposed Linkages

Δ Transaction Cognitions → Δ Attributes/Surface → Δ Transaction Costs/Social Frictions → Δ Outcomes/HPER

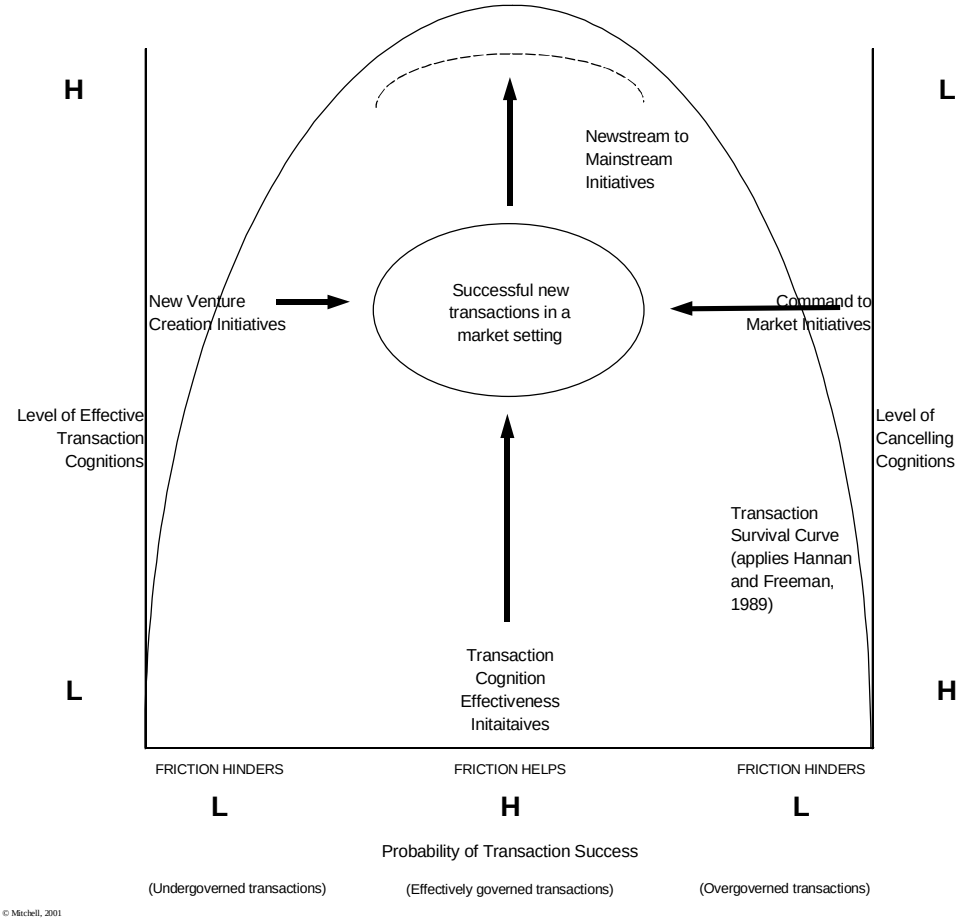
But before the possibilities available from the process suggested in Figure 6-1 can be fully realized, there appears to be a great deal of additional work that must be accomplished. Accordingly, in the next section of this chapter we consider together the possibilities for future gains in high performance economic results in two subsections: (1) organizing the necessary research, and (2) organization of dissemination and implementation initiatives.

Section 6-2: Considerations for Future Gains in High Performance Economic Results

Future gains in high performance economic results are, I have argued, related to levels of transaction cognitions, which appear to be malleable, and which malleability argues for a dramatic increase in both research and outreach initatives.

FIGURE 6-2

Some Suggested Zones for Future Research and Outreach Attention



In Figure 6-2 I attempt to illustrate some of the zones of potential activity that are implicated in this suggestion.

In the figure, I try to illustrate the variety of opportunities that are open to us as our level of effective transaction cognitions increases, and also in areas where canceling cognitions are determinative. The combination of these two comparisons looks remarkably like the mortality curve identified by population ecology scholars (Hannan & Freeman, 1989) for firms within an industry-level population. Depending upon the level of helpful v. hindering social friction/transaction costs, the probability of transaction survival is plotted as a function of expected levels of transaction cognitions and canceling cognitions. Four types of initiatives are suggested in three groupings:

1. Under governed transactions. Under governed transactions are those transactions that have insufficient transaction cognitions available for guidance, which as a result fail due to slippage. New venture creation initiatives are particularly prone to this deficiency.
2. Effectively governed transactions. There appear to be at least two types of effectively governed transactions: (a) those which are already in existence, where expansion of mainstream into newstream activities consists of the effective bridging from old to new, and (b) those where transactions are already in existence, but the level of performance of these transactions can be improved. Both of these initiatives are characterized by glide and traction, which is still susceptible to qualitative improvements.
3. Over governed transactions. Over governed transactions appear where social frictions are sufficiently high that these transactions are likely to fail due to drag. The primary initiative of this type is the "command" or "plan to market" initiatives that are faced by transition economies.

It should be clear from the foregoing analysis, that due to inadequate information (the lack of requisite transaction cognitions) it can be hypothesized that whole categories of possible transactions are missing. Within each of these initiative zones exist specific research questions that—if answered—could contribute markedly to the induction of these economic possibilities. Also within each of these zones exists a set of more specific possibilities for the organization of dissemination and implementation that are prompted by advances in Transaction Cognition Theory. Considerations for both research and dissemination and implementation possibilities are discussed in the subsections following.

Section 6.2.1 Considerations for Organizing the Necessary Research

A Call for Future Research

With the advent of Transaction Cognition Theory we must—at a minimum—now expand our understanding of the manner in which cognition is associated with entrepreneurship, entrepreneurial performance, and the creation of economic independence by individuals, and within firms, industries, and economies. To date, studies in entrepreneurship have not fully explored the possibilities offered by social cognition, managerial cognition, or expert information processing theory, nor have many of the articles in the research literature moved beyond theorizing into the operationalization of cognitive constructs.

Yet there has been an increasing focus on information processing and entrepreneurial cognition in recent entrepreneurship and general management literature e.g. (Busenitz & Lau, 1996; Walsh, 1995). This focus has examined both problematic and positive aspects of entrepreneurial cognitions. For example, some of the problematic consequences of entrepreneurial cognitions occur in entrepreneurial environments characterized by information overload, high uncertainty or novelty, strong emotions, time pressure, and fatigue. These include: counterfactual thinking, affect infusion, self-serving bias, planning fallacy, and self justification (Baron, 1998); overconfidence or representativeness errors (Busenitz & Barney, 1997); and overconfidence, illusion of control, and misguided belief in the law of small numbers (Simon et al., 1999).) Some of the positive consequences include the making of the venture creation decision using cognitive constructs such as expert scripts (Mitchell et al., 2000).

Both theoretical and empirical investigation should be encouraged. Possible areas of focus include both the enabling and the disabling role that cognitions play in: (1) the creation of new transactions and transaction types, and (2) the bundling of transaction flows that results in firms, industries, and ultimately in the economy and society level impacts of entrepreneurship. Thus, work that utilizes multiple and cross-level analysis is especially appropriate.

Ideally, future research will examine the empirical avenues for cross-fertilization and synergy across a diverse range of theoretical perspectives, including but not limited to economic, entrepreneurship, ethics, information processing, managerial cognition, organizational economic, organizational learning, social cognition, and strategic management theories. I suggest that a wide range of approaches to the study of this topic be considered, including novel approaches to the study of entrepreneurs, entrepreneurial processes, and the creation of economic independence through the use of entrepreneurial cognitions. Studies that utilize qualitative case histories and other ethnographic approaches to the study of entrepreneurial cognition are appropriate and are expected to contribute richness to this new body of literature.

Some of the important research question that I have been able to envision in discussion with colleagues include the following:

1. Where do transaction cognitions (planning, promise, and competition) originate? What are the drivers that effect changes or the evolution of entrepreneurial cognitive maps?
2. Where do the canceling cognitions (fatalism, refusal, and dependency) originate? Are they malleable/dynamic, or are there static attributes that should be considered?
3. What is the role of the environment in the shaping and utilization of transaction cognitions?
4. How do transaction cognitions differ cross-culturally? What are the drivers of differences and similarities?
5. What is the role of entrepreneurial cognitions, cognitive maps, expert scripts, or other information processing mental models in the utilization of market imperfections to create value, wealth, and/or economic independence?
6. How can existing models that explain entrepreneurship or entrepreneurial performance benefit from the utilization of constructs from the cognition literature?
7. How might existing work in economic, entrepreneurship, ethics, information processing, managerial and organizational cognition, organizational economic, organizational learning, social cognition, and strategic management theory contribute to the explanation of cognitive aspects of entrepreneurial phenomena?
8. How has the use of certain types of theories or methodologies constrained or enhanced understanding of the processes of entrepreneurial cognition?

Possible Research Initiatives

In response to the above call, I have personally been able to envision—in a boundedly rational sort of way—some possibilities for the integration of Transaction Cognition Theory with existing theories. Then, with the help of the ever-faithful group of colleagues who steadfastly show up to our regular research "brown bags," I have been able to generate ideas for additional research initiatives that follow the progressive steps of credibility development in the construction of social theory (Stinchcombe, 1968: 20).

Possible integration with existing theories. As with most attempts to make advances in a field, it is to be expected that there are other scholars working on the same or similar questions, using the same or similar constructs, but perhaps under different labels, and certainly with unique and helpful perspectives. The proposal of an integrative theory would not be complete without first an acknowledgement of the scholarship presently underway in parallel initiatives, and second, some reflections upon possible linkages. In the three theoretical perspectives discussed within this subsection, the common theme is that these approaches also provide frameworks for "taking on," accounting for, or utilizing social friction. In the following three paragraphs, I shall therefore suggest possible points of integration between Transaction Cognition Theory and Real Options Theory (McGrath, 1999), Game Theory (Keng, 2001), and Bayesian Uncertainty Theory (Cyert & DeGroot, 1987).

Real options reasoning suggests that the key issue in transacting is not "avoiding failure," but managing the cost of failure by limiting exposure to the downside, while preserving access to attractive opportunities and maximizing gains (McGrath, 1999: 16). Real options reasoning characterizes the decision-making opportunities associated with entrepreneurial initiatives as "real options" (1999: 13): investment in the opportunity to continue investment in new combinations (McGrath, 1999: 14; Schumpeter, 1934)—specific efforts to introduce new transactions into the marketplace. In Chapter 2 of this monograph I introduce a Transaction Cognition Theory model of individual economic decision-making behavior (Figure 2-10), which suggests that the fundamental nature of transaction leads to three sequential decision points to resolve the following three questions:

1. Do I have something economic to offer? (which requires competition cognitions)
2. Can I agree on an exchange with another person? (which requires promise cognitions), and
3. Can I deliver? (which requires planning cognitions).

The social frictions from inadequate cognitions result in failed transactions. Real options reasoning develops ideas that can serve as an engine to drive better decision-making: the better utilization of social frictions. These ideas include the notions that: (1) options are vest valued as part of a "bundle," (2) uncertainty—and hence potential variance—is the key to the value of a decision option, (3) failures can have positive consequences, and (4) preventing failure can often mean sacrificing opportunity (McGrath, 1999: 16). Real options reasoning suggests practical methods for the refinement of planning, promise, and competition cognitions—but is especially useful, I think, in the development of refined competition cognitions. The presence of real options reasoning in the cognitions of a decision-maker would therefore be expected to serve as a cognitive indicator of the tendency towards equilibrium (discussed in Chapter 2) that moves a person along the steps of the transacting decision tree (Figure 2-10)

Game Theory also offers the possibility to harness an existing theoretical engine in service of the transformation of social frictions/transaction costs to create high performance economic results. The parallels are readily apparent. There are three key factors/elements in a static game which correspond closely with the transaction cognition model: the Player (individual), the strategy (work) and the pay-off (other). The pay-off is indeed the possible responses that others would react when they encounter and evaluate the Individual's work (i.e. strategy). It appears highly likely that the interrelations between these three game-theoretic elements operate in a manner similar to that suggested by Transaction Cognition Theory (Keng, 2001). Should these interrelationships be

identified and tested, an additional facet of Transaction Cognition Theory could be opened for empirical investigation, modeling, and application.

Bayesian theory and the analysis of risk my not be the newest of ideas, but its applicability continues to become more relevant as the role of cognitions in the accomplishment of high performance economic results is more precisely defined. One of the motivations for the developers of such theory is the drive to develop dynamic models for people involved in sequential decision processes under uncertainty (Cyert & DeGroot, 1987: 188). This approach is certainly relevant to the transaction decision approach suggested in Chapter 2 (Figure 2-10). Consistent with the assumptions of Transaction Cognition Theory, Bayesian analysis of uncertainty rejects the standard notion of decision theory that people actually know their utility functions, and instead works from the position that individuals gain information about utility from their experience—a cognitions acquisition approach.

The capability to utilize the past, to gain an informational advantage in making decisions under uncertainty is a major step forward in the utilization of the scientific method to achieve high performance results (Bernstein, 1998). Unfortunately, until the development of Transaction Cognition Theory, decision theorists were required to defend Bayesian probability-based approaches against charges that in the real world, the actual cognitive processes of decision-makers do not satisfy the coherence properties that are necessary for the existence of subjective probabilities and utilities (Cyert & DeGroot, 1987: 14). Their defense has been to "reason" that most transactions that survive in a market do so because someone, or some group of decision-makers <u>is</u> capable of making decisions under uncertainty in an efficient manner. Transaction Cognition Theory offers Bayesian decision theorists a path for the empirical verification of this assumption, and renews possibilities for the use of a powerful and proven engine for the refinement of planning, promise, and competition-based decision scripts, that can enhance the human capability to better utilize social frictions/transaction costs along the lines suggested in Chapter 2.

The foregoing three possibilities for research integration initiatives are not intended to be exhaustive, but hopefully are illustrative. They do, suggest that the opportunity for additional research initiatives is worthy of further exploration. This exploration is undertaken in the next subsection.

Additional research initiatives. Flowing from the Stinchcombe framework previously presented in Chapter 4 in figure 4-1, and reproduced below for convenience as Figure 6-3, come a set of suggestions discussed with colleagues for further advancement of the credibility of Transaction Cognition Theory itself.

FIGURE 6-3

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

These suggestions have been divided into two lists: The Situation III List—Substantially More Credible, and The Situation IV List—Much more credible.

The Situation III List includes research initiatives that, if successful, will render Transaction Cognition Theory substantially more credible. This research has been underway for sometime. In this case I consider the previous studies that fall into the "B_1, B_2, B_3 similar" category to include the following:

1. B_1, my dissertation research, where three similar outcomes: the composition, classification, and creation of new venture formation expertise were studied quantitatively at the individual/firm level of analysis using a sample of entrepreneurs and business nonentrepreneurs from the Western US (Mitchell, 1994a),
2. B_2, research that drew new samples from a variety of countries utilizing the same or a similar research design to that of my dissertation, e.g., (Mitchell et al., 1998; Mitchell et al., 1998; Mitchell et al., 2000; Mitchell et al., 2001), and further explored the issues raised by the new 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 exert information processing theory as the basic interpretive lens.

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 monograph, and collects data world wide, perhaps utilizing the web or other information technology to access respondents.
2. B_6, new qualitative research that seeks to understand the nature of canceling cognitions: Fatalism, Refusal, and Dependency.
3. B_7, new quantitative research that seeks to calibrate canceling cognitions: fatalism, refusal, and dependency with respect to the primary cognitions: planning, promise and competition, and to suggest a model for the utilization of these indices in further research.

The Situation IV List includes research initiatives that, if successful, will render Transaction Cognition Theory much more credible. To accomplish this task, according to Stinchcombe (1968) the consequences predicted by the theory must be quite different. At least six possibilities suggest themselves:

1. B_1, cross level research, that operationalizes the constructs and propositions suggested in Chapter 3.
2. B_2, new research that utilizes social exchange theory to examine history and historical institutions for evidence of the interdependencies, processes, and relationships suggested by Transaction Cognition Theory.
3. B_3, new research that seeks to address the problems within neoclassical economics that yet remain to be explained.
4. B_4, new research that applies Transaction Cognition Theory to issues in the management of currencies.
5. B_5, new research that seeks to understand and explain the transitions among/between transacting systems (e.g. barter to market ↔ market to barter).
6. B_6, new research that expands the transaction model to explain other phenomena beyond economics, such as political transactions, or religious transactions.
7. B_7, new research that expands the transaction model to include multiple nodes in place of the standard structure (e.g. a joint venture—two—transaction creators, etc.)

Certainly, the foregoing are only a few ideas to "prime the pump" in the area of needed research within the Transaction Cognition Theory stream. While, in my experience, I have found researchers within some theory streams to be inclusive, and others exclusive, I am hopeful that the delineation of the foregoing research ideas will signal to colleagues in multiple disciplines the inclusive invitation to participate in an exploration that is just beginning. In the service of this objective, I believe that the dissemination of the ideas and possibilities offered by Transaction Cognition Theory, and the implementation of a set of basic steps needed to facilitate the early realization of potential benefits is essential. The next subsection addresses these considerations.

Section 6.2.2 Considerations for the Organization of Dissemination and Implementation

A Call for Dissemination and Implementation Initiatives

Given the present state of affairs in the accomplishment of economic results (Section 6-1) and given that an extensive research agenda can be identified (Section 6-2.1), it seems logical to suggest a call for dissemination and implementation initiatives. Such initiatives should work towards meeting the needs of and empowering the stakeholders who have legitimate, urgent claims on new ideas, methods, and possibilities. In an earlier article, I have characterized such stakeholders as "dependent" upon those individuals and entities who have the power to take "definitive" action (Mitchell & Agle, 1997). While I cannot fully conceptualize a comprehensive list of the individuals and entities that might be of assistance, I can see that unless the list is inclusive and substantial, that an unacceptable state of play in economic consequences will persist.

I believe that well-intended people need rallying points to focus these intentions. Thus, in the following subsection I suggest two possible initiatives that have the capability to meet the needs of

the dependent stakeholders, which I have identified to include (at least) the research community, and some 3 – 5 billion individuals who are under prepared to fully contribute to the new global economy.

Possible Initiatives

The two possible initiatives to which I have committed and shall continue to commit a substantial portion of my career and intellectual energy are the Human Economic Literacy Project, and the formation of a Global Committee for the establishment of Venture Analysis Standards. The vision statements for each initiative follow.

Economic literacy initiative vision statement. It has been said that the greatest discovery of our modern age is that "we become what we think about" (William James, 1890). With well over half of the world's people living in circumstances of economic disadvantage, especially within the third and fourth economic tiers, the time has come to ask: What are we thinking about?

We can only think about what we have somehow learned. Therefore, according to the above logic, economic disadvantage results from a lack of economic literacy. Recent applications of Nobel Prize winning scholarship (Arrow, 1972; Simon, 1978; Coase, 1991) in an award-winning program at the University of Victoria, identify and teach three universal subsets of knowledge that form the creative forces that are at the foundation of global economic literacy: planning, promise, and competition cognitions. Transaction Cognition Theory—an approach to the achievement of high performance economic results through accurate economic thought—proposes that those who possess these three universal subsets of knowledge are economically literate, and are therefore able to enact successful new transactions anywhere on the globe, regardless of culture or political system.

I believe that the time has come to call upon the world to undertake human economic literacy as a new initiative. Let us, by the year 2011, through a project founded upon the principles of human economic literacy, map a path such that the UN Global Compact truly does "reconcile the creative forces of private entrepreneurship with the needs of the disadvantaged and the requirements of future generations" (Kofi Annan, 1999).

The Human Economic Literacy Project (HELP) initiative would accelerate research and application, and develop processes and technology that—over the term of this 10-year project—could make possible within our lifetime the elimination of widespread economic illiteracy. Upon a foundation of economic literacy, high performance economic results—as uniquely defined within nations and cultures—can become a reality for the majority of the people of the world.

Venture analysis standards 2004 initiative vision statement. Effective capital formation is at the root of advanced economic results. Yet new ventures have the most difficulty raising capital because of the complexity inherent in the evaluation of any new business. To access the most sophisticated capital markets, the capital structure of businesses must be refined to be clearly understandable to investors. For example, securities regulating agencies require standardized analysis and reporting of certain financial aspects of businesses that qualify for registration under applicable regulations. Thus, for example, accounting and auditing principles and standards have been developed and agreed upon within given jurisdictions, and efforts at global accounting standards are well along in development.

It therefore seems logical to suggest that standardization efforts be expanded to include earlier stages of the capital formation process. Recent research demonstrates that a foundation exists for the identification of attributes that are common to new business. Pilot projects in North America

using a set of demonstration standards have confirmed that such an assessment approach is possible and effective.

I believe that it is now time to call upon the economic leaders within key world economies to undertake a 3-year initiative that will result in the formation of the Global Committee for Venture Analysis Standards. This committee would consist of representatives from key economies, and would set as its objective the dramatic reduction in new venture failure through the development, testing, and promulgation of global venture analysis standards.

It appears likely to me that the results of this initiative will be far-reaching, and will dramatically enhance the effectiveness of capital formation wherever they are applied. I enthusiastically invite all interested parties to participate both intellectually and financially to the extent possible given local circumstances. Together, we can make a remarkable contribution to the economic well being of the global community.

Section 6-3 Conclusions

A Global Call

This moment in time is right, I believe, for such initiatives. In the World Economic Forum held in Davos, Switzerland, in January 1999, UN Secretary General Kofi Annan focused the attention of the world on global economic possibilities, when he issued this call:

> "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 presently the second wave of globalization is sweeping across the planet: the first wave (mid 1800's to the late 1920's) having been driven by the falling transportation costs of physical goods (the invention of steamships, railroads, automobiles), and the second wave (1980's onward) now being driven by the dramatic reduction in telecommunications costs—the ease of moving ideas from mind to mind (microchips, satellites, fiber optics, the internet) (Friedman, 2000: xviii). The first wave of globalization created economic shifts that stimulated boom (1920's) and bust (the Great Depression), a forecast of inequities in the distribution of the new wealth created by the combination of the industrial revolution and Globalization that polarized discussion predominantly around distribution issues 1 (Marx & Engels, 1848) (with scant attention to addressing production issues in tandem), and gave rise to class struggle-based revolutions that effectively shut down Globalization 1 as a system, and replaced it with a Cold War System (2000: 7). But neither the first globalization system nor the Cold War system has produced global high performance economic results. In fact, the reverse is true[71].

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[71] 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, or the fact that the number of overweight people on the planet today has now 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? Not even close.

So according to the definitions of high performance economic results set forth earlier in this monograph, and as I seek to demonstrate, these achievements hardly accomplish the full extent what I believe is possible or might reasonably be construed as "high performance" economic results. Thus: possibilities!

The Globalization 1 system generated the capability to create wealth from new methods in the production and distribution of industrial products, but the Cold War system distorted the development of this 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 system is a patchwork of planetary level partitions that yielded a world where " . . . both your threats and opportunities in the Cold War system tended to grow out of who you were divided from" (2000: 8), and leaves us to with a world in which an unfair playing field now exists in both the production and distribution of wealth, 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 (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. We do need to "wise up."

In his Ruffin Lecture on stakeholder value and the entrepreneurial process, Professor S. Venkataraman has asserted that the foregoing two processes: value creation, and value sharing, are common ground for both the field of business ethics and the field of 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 are: (1) the production of wealth (value creation), and (2) its distribution (value sharing) (Hugo, 1982(1862): 722). As noted earlier in this chapter, the connections between Transaction Cognition Theory and the stakeholder concept relate to both the production and the distribution of wealth in society.

This is important, I think, because Globalization 2 is now beginning to generate the capability to produce vast new reservoirs of wealth from information. I cannot help but wonder about the outcome of Globalization 2 if—as in the case of Globalization 1—the discussion becomes polarized around only the distribution of wealth. Can we expect Revolutions 2? Cold War 2? Or should we instead try to produce a better set of results? The evidence suggests that it's time to "wise up" in the area of prosperity, and the UN Secretary General has issued a call to do just that!

But what does this in fact mean?

First of all, because the new wealth creation is based upon bringing on line the talents and capabilities of at least 3-5 billion presently untapped minds, it means that economic literacy is crucial. In this monograph I have argued that possession of three universal subsets of knowledge liberate the creative forces that are at the foundation of economic literacy for everyone: planning, promise, and competition cognitions. Transaction Cognition Theory, which suggests the achievement of high performance economic results through accurate economic thought, leads us to expect that those who possess effective levels of these three universal subsets of knowledge are economically literate, and are therefore able to enact successful new transactions anywhere on the globe, regardless of culture or political system.

Second, it means that with a new source of value creation (information-based value) we once again have an opportunity to address value creation and value sharing. The revenue model for the information age (who makes money from information, who should make money from information, and how can money be made from information) is not fully understood. So called "irrational exuberance" (Shiller, 2000) conjured trillions of dollars in stock market value which has once again vanished (Will, 2001). So because the information age is still lacking a fully understood revenue

model, there is presently a significant opportunity to redefine the wealth distribution process, as linked through IT, to the wealth creation process.

In both West and East, we have seen the 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. As societies, we have experimented extensively with the idea of compulsory redistribution of wealth. And we 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 we can redistribute money, but we aren't able to redistribute prosperity. So what if, instead of continuing down a problematic old road, we were to take the new opportunity offered by the emergence of the information driven wealth creation possibilities[72] of Globalization 2, and construct an economic performance model that is based upon both value creation and value sharing: production and distribution? One logical argument for this approach 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.) don't appear to be as effective as they have been in the past when geographical and other physical or legal barriers to wealth distribution could be established and maintained. The lack of a revenue model has been a problem for the valuation of dot.com companies in the late 2000 early 2001 stock market—but could this be an opportunity for more effectively producing and distributing wealth?In the past, the separation of the production and the distribution of wealth has been accepted as the natural state of affairs (Hugo, 1982(1862): 722).

In the information age, this separation need no longer be the case, because—due to the communications revolution—production and distribution are, or can be, much more closely connected, as every producer acquires and utilizes a fundamental understanding of effective planning, promise, and competition cognitions as they apply within their industry and society. The information revolution offers vast new opportunities for people to apply information to transform the social friction/transaction cost-based problems that have been categorized within this monograph as "slippage" and "drag," into the social friction/transaction cost-based opportunities of "glide" and "traction." (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 "E-Bay" 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 envision an IT production and distribution stream? And if we can, what would it take to make such a thing, and others like it, possible?

The Doctrine of Abundance

At the beginning of this monograph I made three assertions: (1) that there exist three categories of cognitions: planning, promise, and competition cognitions; (2) that each category of cognitions is necessary but not sufficient to effect high performance economic outcomes; but (3) that together they are sufficient. As the arguments in this monograph have progressed I have introduced the cognitions, and their canceling counterparts (fatalism, refusal, and dependency

[72] 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.

cognitions), and have made a case for the relative value of each in the accomplishment of high performance economic results, and for their combined sufficiency. It is now time to face squarely the logical consequences of this argument.

We have seen, in Section 6-1, that the state of play in high performance economic results is unacceptable. We have reviewed together in Section 6-2, the possible research, dissemination, and implementation possibilities. What, therefore, is the sum total of these possibilities? What—as an undergraduate friend of mine used to say—is the "net upshot?

The net upshot, I hope, of this monograph is that you—as reader—have been developing in your own mind some form of what I shall now call: The Doctrine of Abundance. This concept is not new to the research literature (or in the popular press either); but the delineation of a rigorous theoretical development of such a paradigm, I believe, is new, and therefore offers new possibilities.

The doctrine of abundance is simply stated: Every person has the right to be optimally productive and to receive a fair portion of the value created. According to a systematic and rigorous derivation that is founded on the nature of the transaction itself, the right to the optimal creation and sharing of wealth depends upon the possession by each person of effective levels of transaction cognitions, because only with the capability conferred by effective levels of transaction cognitions (planning, promise and competition), to organize exchange relationships (among transaction creators, others, and the work), to change the nature of the social surface (raising or lowering the levels of bounded rationality, opportunism, and specificity), can social frictions/transaction costs be utilized to create high performance economic results.

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APPENDIX 1

Example:

Guide to the Student Preparation Portfolio 2000

STUDENT PREPARATION GUIDE 2000

ENTREPRENEURSHIP Program
University of Victoria
Faculty of Business

INTRODUCTION

We are pleased that you are considering the Entrepreneurship (ENT) Program in the Faculty of Business at the University of Victoria. To enable you prepare to get the most from the program, and to meet your learning objectives, we have created the student preparation guide.

The UVic Model

- The UVic model of entrepreneurship education uses an approach that focuses student attention upon expertise/skill acquisition.
- To accomplish this, the program provides concepts and experiences that help you to enhance your *cognitive system*—the foundation of expertise/skill.
- The effectiveness of the program on your expertise/skill acquisition depends almost entirely upon the intensity, duration, and content of the ***practice*** you engage in, both while in the program, and while completing the 8-month co-op requirement following your completion of the entrepreneurship core semester.
- Like most high-performance activities, the highest performers decide in advance to commit to a practice regimen, and to accept direction from mentors and coaches. (Note: This is a very different approach to entrepreneurship education than is used other places, where entrepreneurs are thought of as highly independent individuals who learn from the "school of hard knocks," and spend most of the learning time on business plan skills only.)
- There is a direct and proven link between deliberate practice and your eventual level of expertise/skill (and ultimately your performance level); but there are many factors that contribute to your level of success at achieving the proper levels of intensity, duration, and content in your practice behaviours.

The "Baseline Portfolio" Concept

- To enable both your new coaches/instructors and you to realistically evaluate the likelihood that you will flourish within the ENT Program, we have prepared a list of components of a personal portfolio that represent many of the success factors that lead to effective practice, and thus form a baseline starting point for your ENT expertise/skill acquisition.

What is a Baseline Portfolio?

- The ENT Baseline Portfolio is a loose-leaf binder, or sectioned file folder into which you place the evidence (reference letters, test scores, project descriptions) that will convince an objective observer that your assessment of your capacity to effectively practice is accurate.
- Your effectiveness in skill practice; and in the subsequent development of your cognitive system depends upon an accurate assessment of your starting point.

A 3-Step Process

- During your participation in the ENT Program you will have the opportunity to participate in a 3-step process to expertise/skill acquisition.
- These steps are as follows:

1. Step 1 (beginning of core semester) is to assess yourself on your personal level of each of the components of a personal portfolio that represents many of the success factors that lead to effective practice.
2. Step 2 (during the core semester) will be to regularly report your practice activities and to participate in feedback sessions (including tests, debriefings, etc.).
3. Step 3 (in ENT 413—core semester—plus in co-op and elective terms) will be to add to your portfolio additional evidence that you have been successful in the development of your entrepreneurship cognitive system.

- Following are the instructions for Step 1. Instructions for the later steps will be given during the core semester.

STEP 1 – INSTRUCTIONS

- Please rate yourself on each of the portfolio component dimensions that appear below.
- ***Consider a rating of "1" to be LOW, and a rating of "6" to be HIGH.***
- You should submit a baseline portfolio that consists of numbered sections that follow the numbered dimensions below, with items in each section that support your self-rating. (For example, Items 1 and 3, might be well-supported with reference letters; while Item 2 may be supported by a few descriptive paragraphs prepared by you.)
- Based on the evidence that you provide in the sections of your baseline portfolio in support of your rating on **each** question, an objective confirmation of the accuracy of your rating will be made by the coaching/instructor team, and recommendations will then be generated to optimize, where possible, your potential in the program.

A. External Social Dimensions

1. Parental/Spousal/Family Support
   What level of encouragement, financial backing, and willingness to sacrifice can you expect from parents/spouse/family, as you attempt to acquire entrepreneurial expertise?

YOUR RATING						COACHES' RATING					
|___	___	___	___	___	___|	|___	___	___	___	___	___|
1	2	3	4	5	6	1	2	3	4	5	6

2. What level of input, direction, critique, and support are you willing to accept from coaches on the UVic ENT Program coaching/instructional team?

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

3. What level of contact/evaluation/encouragement do you expect to receive from ENT role models/mentors—people who are themselves entrepreneurs or have significant venturing knowledge—who know you, and are willing to support your acquisition of ENT skills?

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

4. What level of encouragement, financial backing, and willingness to help can you expect from friends, and other members of the community?

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

5. How much financial support do you have to ensure that you are able to devote the time needed to practice ENT skills? (Please see note below.)

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

(Note: To decide on your rating level for this question, please use the following guidelines:
- Low: Have to work to supplement my financial resources while in the Program.
- Medium: Have enough financial support to finish my degree.
- High: Have enough financial support to finish my degree and to start a business if I want to.)

6. How free are you from competing demands on your time? (Please see note below.)

YOUR RATING						COACHES' RATING					
Distracted					Free	Distracted					Free
1	2	3	4	5	6	1	2	3	4	5	6

(Note: To decide on your rating level for this question, please use the following guidelines:
- Distracted: > 30 hrs./wk. committed to job or other demands.)
- Concentrated: I can fully concentrate on the ENT program.)

Internal Motivation Dimensions

- To assist you to answer the questions in this section it is <u>recommended</u>, <u>but not mandatory</u> that

you complete some standard rating questionnaires (mainly the MBTI) that can provide you with feedback and information that may be useful for you to include in your portfolio. Blank copies of such questionnaires are available through the International Centre for Venture Expertise (ICVE) in the Business and Economics Building.

7. Please rate your people skills as they relate to how outgoing and willing you are to engage in socioeconomic relationships (e.g. selling; buying for resale, etc.).

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

8. How would you rate your ability to concentrate your mind on a topic? (Please see note below.)

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

(Note: To decide on your rating level for this question, please use the following guidelines:
- Low: Become bored after I have engaged a task or topic for a time period of 5 minutes or less.
- Medium: Can concentrate for periods of 30-60 minutes without becoming restless.
- High: Can concentrate for periods of up to 3 hours without losing focus.)

9. How would you rate your tolerance for routine or repetition? (Please see note below.)

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

(Note: To decide on your rating level for this question, please use the following guidelines:
- Low: I get anxious when I repeat some task more than once or twice, whether in the same time frame, or over the period of a few days.
- Medium: If it is something that I like, I can repeat a task or activity many times within a time period, and I really don't mind engaging in this process regularly.
- High: I love to repeat processes or tasks for the purpose of improving them, and I actively schedule time to do so each day in a regular weekly system.)

10. How would you rate your will to win—your competitiveness?

YOUR RATING						COACHES' RATING					
1	2	3	4	5	6	1	2	3	4	5	6

C. External Information Dimensions

11. What level of connection or involvement do you have with entrepreneurial activities? (Please see note below.)

YOUR RATING COACHES' RATING

|___|___|___|___|___|___| |___|___|___|___|___|___|
1 2 3 4 5 6 1 2 3 4 5 6

(Note: To decide on your rating level for this question, please use the following guidelines:
- Low: Up to this point in my life, I don't know any entrepreneurs, and I do not associate with others who talk about and are interested in entrepreneurship.
- High: I have already started one or more businesses, I have joined ACE—The Association of Collegiate Entrepreneurs—or other organizations that promote entrepreneurship, and I know, regularly associate with, and share experiences with other entrepreneurs.)

12. What level of regular information input about entrepreneurship are you presently exposed to? (Please see note below.)

YOUR RATING COACHES' RATING

|___|___|___|___|___|___| |___|___|___|___|___|___|
1 2 3 4 5 6 1 2 3 4 5 6

(Note: To decide on your rating level for this question, please use the following guidelines:
- Low: Up to this point in my life, I have not subscribed to magazines, journals, or newsletters about entrepreneurship, have rarely read or purchased ENT-related periodicals or books, and have not accessed information about entrepreneurship using www, TV, or other electronic media.
- High: I have subscriptions to ENT-related periodicals; I have a personal collection of books on entrepreneurship—more than 6 books, have regularly accessed information about entrepreneurship using www, TV, or other electronic media, and I am constantly on the lookout for more information about the field of entrepreneurship, innovation, and new venture development.)

D. Practice Dimensions

13. How willing are you to set up and maintain a schedule to deliberately practice—on your own initiative BEYOND class assignments—the ENT skills (searching, screening, planning/financing, setting-up, starting-up, ongoing orchestrating) that you will be learning in the ENT Program?

YOUR RATING COACHES' RATING

|___|___|___|___|___|___| |___|___|___|___|___|___|
1 2 3 4 5 6 1 2 3 4 5 6

14. How many hours each week (outside of class <u>INCLUDING</u> homework) will you utilize to practice skills of entrepreneurship (searching, screening, planning/financing, setting-up, starting-up, ongoing orchestrating) that you will be learning in the ENT Program? (Please see note below.)

YOUR RATING	COACHES' RATING
|___|___|___|___|___|___|	|___|___|___|___|___|___|
1 2 3 4 5 6	1 2 3 4 5 6

(Note: To decide on your rating level for this question, please use the following guidelines:

- Low: Less than 1 hour outside of class for each hour in class.
- Medium: About 2 hours outside of class for every hour in class.
- High: Over 3 hours outside of class for every hour in class.)

15. How willing are you to attend 100% of the classes to learn all of the new ideas to be presented, and to discard any previous misconceptions that you may have erroneously acquired about entrepreneurship?

YOUR RATING	COACHES' RATING
Unwilling Willing	Unwilling Willing
|___|___|___|___|___|___|	|___|___|___|___|___|___|
1 2 3 4 5 6	1 2 3 4 5 6

CONCLUSION

- Thank you very much for your willingness to prepare this first important step toward enhancing your own entrepreneurial skill/expertise.
- As Administrative Director of the Program, I wish to give you every encouragement to gain these life-changing capabilities.
- In the Entrepreneurship Program, we believe that everyone who has the desire can enhance their entrepreneurial expertise.
- We look forward to having the opportunity to work together with you to create a stimulating and rewarding experience in the UVic Entrepreneurship Program.

Cordially,

The ENT Teaching Team

APPENDIX 2

Excerpt from World Bank Group

World Development Indicators 2000

Table 1.1