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TOWARDS A THEORY OF HUMAN CAPITAL TRANSFORMATION THROUGH HUMAN RESOURCE DEVELOPMENT

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ABSTRACT

The purpose of this research was to create a theory to explain and understand how human capital is transformed by human resource development (HRD).

To develop the theory of human capital transformation, the most appropriate theory building research process was identified: the General Method of Theory Research in Applied Disciplines (Lynham, 2002). The General Method consists of five recursive phases: conceptual development, operationalization, confirmation or disconfirmation, application, and continual refinement.

Using the General Method as the framework, specific theory building research procedures were identified and integrated into the appropriate phases. For this study, the conceptual development and operationalization phases were completed. The study concluded with developing two case studies that will be used to complete the confirmation or disconfirmation phase.

The products of the study include findings about theory research and findings about human capital transformation through HRD. The theory research findings suggest that there are five distinct components embedded in the conceptual development phase of the General Method. These components must be integrated by the theorist in order to develop a coherent and consistent conceptual framework.

The human capital transformation findings were the result of creating the theory of human capital transformation through HRD. The study found that this transformation is embedded in organizational processes. The transformation occurs when human resource development changes the relationships between three value creation drivers

embedded within organizations. The three value creation drivers are human, social, and structural capital. The study also found that there are six key HRD intervention points required for human capital transformation and that HRD is the only tool organizations have that can be effective in all six areas.

From this study, practitioners have an innovative, research-based model to make sense out of the relationships between human, social, and structural capital. Practitioners can use the model to target specific interventions designed to improve the relationships between the three value creation drivers. Further, researchers are given a new perspective from which to investigate how human resource development transforms human capital. The case studies designed in this study are the next step of the author's long term research agenda.

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CHAPTER ONE:

INTRODUCTION

A recent article in the Harvard Business Review entitled *The Young and the Clueless* described how the stock value of an international consumer products company "plummeted," how its "customers were furious" and how "thousands of orders had been delayed" (Bunker, Kram, & Ting, 2002, p. 81). The reason for the loss of stock value and production setback, as indicated in the article, was due to one person's lack of interpersonal skills. This person had been promoted rapidly and was in a position of high responsibility. He was "brilliant, creative, energetic, aggressive—a strategic and financial genius" (Bunker, et. al, p. 81). He had many individual talents that could *potentially* be transformed into positive organizational level outcomes.

However, he was also "widely viewed by his peers and subordinates as self-promoting, intolerant, and remote," and "not terribly concerned" (p. 82) about what people thought of him. His rapid rise through the leadership ranks had not provided him with the opportunity to develop the "emotional competencies that come with time and experience—competencies like the ability to negotiate with peers, regulate their emotions in times of crisis, or win support for change" (p. 82). Consequently, according to the article, there was a barrier between him and the people he worked with. This barrier prevented critical relationships to be formed that may have enabled collaborative problem solving, innovation, and ultimately organizational success.

This scenario illustrates the connection between an individual-level resource and organizational level consequence. Individual-level resources include the knowledge, skills, and attitudes possessed by the individual. In this case, the person described above

did not have the requisite skills necessary to work effectively with others, despite having many other talents that could bring a positive return for the organization. From the organization's perspective, and in order to encourage positive organizational outcomes, a prudent investment would have been to invest in improving the relational skills among key leaders and managers. This investment could have enabled an even higher return on the other exemplary talents and skills possessed by these individuals.

Investments in human development with expected organizational level returns are traditional capital concepts (Becker, 1993; Nakamura, 2003; Swanson & Holton, 2001) that continue to adapt to today's knowledge economy. The definition of capital has expanded to include *intangible* assets, (Hand & Lev, 2003; Adler & Kwon, 2002; Storberg, 2002). Intangible assets are now seen as "the major value creator at both the corporate and national levels" (Hand & Lev, 2003, p. 2). The assets described in the preceding scenario are called the *human capital* of the employee, and this study focuses on how individual human capital is transformed into organizational performance.

Because of the increased dependence on knowledge workers, researchers remain focused on trying to understand how organizations should develop, manage, and sustain its human capital. Sustained performance is highly valued because constant changes in today's political, economic, technological, and social arenas continually challenge the status quo (Bontis, 2002). According to Preston (2001), sustainability has become a strategic imperative and a fundamental market force affecting long-term financial viability and success. Today's organizations are faced with a double challenge: first, to develop talent by investing in training and development; and second, to manage that talent for sustained performance during times of constant change by investing in

organization development. Only by accomplishing *both* tasks will organizations be able to capture the highest rate of return on investments in human capital (Romer, 2003; Preston, 2001).

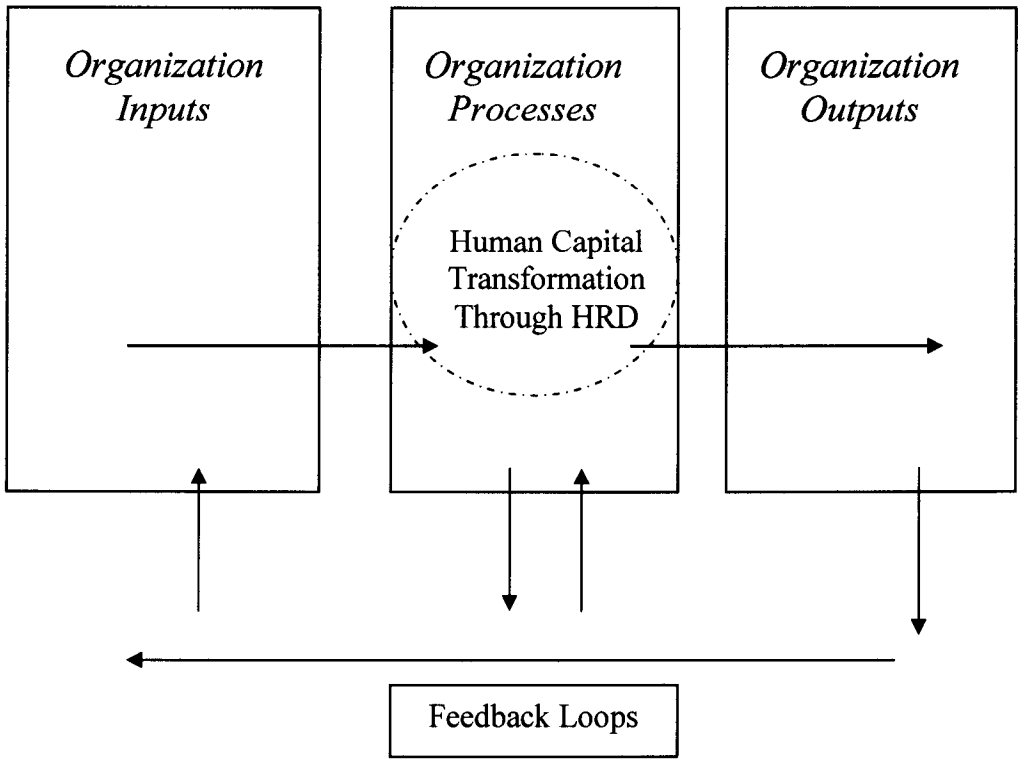
Human resource development, management education, sociology, public policy, and political science are some of the disciplines interested in understanding how organizations create new ideas and build sustainable human collectivities that perform and learn together over time to reach common goals. At the core of these inquiries usually lies some intention to explain, manage, or predict the transformation of individual level attributes (e.g., human capital) into organization level outputs (e.g., performance, innovation, knowledge creation, etc.) in order for the organization to survive in times of constant change. For this study, both training and development (T&D) and organization development (OD) are considered the transformative motors, fueled by human capital, that generate sustained organizational success.

The Problem

The problem addressed by this study is the lack of understanding how individual human capital, however defined, is transformed through human resource development. According to Prusak (1996), "researchers in the area of sustainable competitive advantage have come to the conclusion that the only thing that gives an organization a competitive edge, the only thing that is sustainable, is what it knows, how it uses what it knows, and how fast it can know something new" (p. 5). This study is framed by the problem of sustained performance, and it seeks to understand how it is that human capital is transformed into something of collective value over time. For this study, the

collectivity is defined as an organization; however, future studies may expand the definition to include community, region, state, or nation. The following figure illustrates this overall process.

Figure 1.1
Human Capital Transformation as a Process Contributing to Sustained Performance



The problem under investigation is divided into two related components. First, the problem is to understand how individual capital is transformed into organizational output through human resource development (HRD) activities. Second, the problem is to understand how individuals choose to invest (and re-invest) their stock of human capital into the organization over time. This reinvestment is a critical factor for sustained performance. This study frames these problems from a basic economic perspective:

investments with expected returns at both the individual and organization level. The organization invests in HRD activities that will increase the return on investment (Swanson & Holton, 2001). Because the return on these investments is increasingly uncertain (Hand & Lev, 2003) from the employer's perspective, more research and theory building is needed to decrease the level of uncertainty. Likewise, employees invest in activities (learning, problem solving, innovating, implementing) that will provide them with some valued return (compensation, stability, influence, status, etc.). Once the employee chooses to become embedded in an organization's socio-technical processes, two simultaneous processes begin. First, the individual asset of human capital is transformed into something of value to the organization. Second, the individual asset of human capital under the employee's control is increased. The employee, with these new skills, attitudes, and knowledge can then choose whether or not or to what degree to apply this new level of human capital towards organizational goals, and the cycle continues. The two related problems (organizational and individual investments with expected returns) are therefore central to understand how human capital is transformed into sustained organizational performance.

Purpose of this Study

The purpose of this study is to create theory to explain and understand how individual human capital is transformed by human resource development. The performance outcome could be shared norms, sustained collaborative action, knowledge creation or innovation, organizational learning, decreased transaction costs, or increased control. This list is not exhaustive, but illustrates the diverse types of outcomes that have

been demonstrated to come from various processes of intangible capital transformation (Lin, 2001; Poole, Van de Ven, Dooley & Holmes, 2000; Nooteboom, 2002; Fitz-Enz, 2000; Krempl & Pace, 2001; Swanson & Holton, 1997; Poell, Van der Krogt, & Wildemeersch, 2001; Poell & Van der Krogt, 2003).

The Research Question

The study frames the problem of sustained organizational performance in terms of capital transformation and sustained (e.g., long-term) value creation. Based on a review of academic literature on intangible capital, it is appropriate to classify a non-economic process as capital (Hand & Lev, 2003; Zucker, Darby, & Brewer, 2003). For example, Lin (2001) asserts "there is no substantial change in the definition of (human) capital relative to the Marxian notion. It remains an investment with an expected return in the marketplace" (p. 9). Adler and Kwon (2002) present seven characteristics of capital in order to validate the use of the term 'social capital' and assert it "falls squarely within the broad and heterogeneous family of resources commonly called 'capital," (p. 22). Using the terms *capital* and *capital transformation* allows the inquiry to integrate multiple types of capital (human, social, intellectual, structural, etc.) that are crucial for sustained organizational performance in today's knowledge economy. The terms *value* and *value creation*, both at the organization and individual level, allow the inquiry to incorporate a variety of desired outcomes (learning, sustained competitive advantage, decreased transaction costs, etc) into the theory-building research process.

The research questions that emerge from this perspective are:

1) How does human resource development impact the relationships between human, social, and structural capital? and

2) What are the temporal sequences of the process of human capital transformation?

- *Definition of Human Capital Transformation: An increase in the quantity or quality of individual contributions towards organizational goals. The individuals are embedded in social networks and organizational contexts, and take actions to accomplish desired outcomes.*

Need for Human Capital Transformation Theory

Two factors have combined to expose the current urgency to develop theories on how human capital is transformed by HRD. First, the emergence of the knowledge economy with its concurrent technological revolution has called into question the existing methods and types of investment (Edvinsson & Malone, 1999; Aliaga, 2001; Dess & Picken, 2000; Blair & Kochan; 2000, Hand & Lev, 2003) as well as the existing frameworks for measuring and managing growth (Fitz-enz, 2000; Fitz-enz & Phillips, 1998; Cohen & Prusak, 2001; Blundell, Dearden, Meghir & Sianesi, 1999; Lepak & Snell, 1999; Becker, 1993, Lev, 2003; Chan, Lakonishok, & Sougiannis, 2003). Because investment and growth are two concepts integrally connected with the historical definition of capital, changes in these concepts will have consequences for any type of capital or neo-capital (e.g., intangible capital) theory. We need to know how to invest in intangible capital in order to transform its 'raw goods' (e.g., human capital) into the desired outputs of knowledge creation, collaboration, or adaptation.

The second factor exposing the need for a theory of human capital transformation is the recent (since the 1960s) historical evolution in the definition of capital (Becker, 1993). As described earlier, the definition of capital was expanded to include resources held by the individual, not just the resources held by business owners and corporations. For the first time in the early 1960's, researchers were given a micro-level framework with which to study the transformative processes of capital. Today, many scholars agree that human capital is increasingly integral to organizational success (Cohen & Prusak, 2001; Lin, 2001; Fernandez, Castilla & Moore, 2000; Gozdz, 1995; Hand & Lev, 2003; Lev & Sougiannis, 2003). Because of the increased influence of intangible capital on organizational value, Becker's contributions permit scholars to define, measure, and theorize about the root causes, conditions, and management of human capital.

Despite the demonstrated financial and social impact of human capital as described above, we currently do not have a theory that is able to explain *how* different types of individual resources (material or psychic) are transformed into organizational level outcomes. What is needed is a theory that incorporates the many facets of intangible capital (the 'creating' and 'sustaining' elements, the 'innovation' and 'implementation' components, the 'cooperation' and 'competition' elements, the 'exploration' and 'exploitation' processes, and the 'benefits' and 'restrictions' elements) in order to produce a comprehensive understanding of how human capital is transformed into sustained organizational performance.

Human resource development and management literature often focus on *one* type of organizational intangible capital and provide a partial view of how human capital is transformed into an organization level output. For example, Edvinsson & Malone (1997)

and Zucker, Darby & Brewer (2003) focus on intellectual capital. Adler & Kwon (2000), Tsai & Ghoshal (1998), and Gant, et. al. (2002) focus on social capital. Becker (1993) and Aliaga (2001) focus on human capital. Deng, Lev, & Narin (2003) focus on the investments in research and development that create value. Nonaka and Takeuchi (1995) focus on knowledge creation. These researchers focused on understanding one type of intangible capital but are able to explain only a *part* of the whole transformative process. Human capital theory explains individual investment and return but it does not explain collective value. Structural and intellectual capital theories help to inform how to best organize an organization for higher returns from knowledge and innovation, but they do not explain how and why individual value is transformed into collective value. Social capital theories offer a comprehensive framework for understanding how people can create value together, but the theories do not help us predict which type of organizational outcome will occur. Development-centered research describes the increasing rate of return on research and development investments, but does not offer a theory on *why* those investment decisions were made or *how* the investment drove the value creation process. What is needed is a perspective that integrates the various levels and explains how organizational outcomes will be generated from individual human capital contributions. The multi-level investments in knowledge creation, knowledge management, and organizational learning processes that transform human capital are deeply embedded in organizational practice but are not yet fully understood.

Finally, organizations struggle to track the investments in human capital and "track the implications of these investments for profitability and share value" (Blair & Kochan, 2000, p. 19). These authors suggest that future research on human capital needs

to "be embedded in the study of organizational processes...(because) only by examining these issues together are we likely to understand how different configurations of human and organizational capital within and across organizational boundaries might add value and enhance or destroy the competitive advantage" (ibid, p. 22). For this research, the embedded organizational processes are T&D and OD, and the focus is to understand how these two processes transform human capital into organization level outputs.

Significance of Human Capital Transformation Theory to HRD

While the definition of HRD remains debated in the literature (Swanson & Holton, 2001), the University of Minnesota definition has been selected for this study. This definition asserts *HRD is a process of developing and unleashing human expertise through personnel training and development (T&D) and organization development (OD) for the purpose of improving performance.* A theory of human capital transformation can accomplish the individual and organizational level goals of HRD: unleashing individual human expertise and improving organizational performance. Performance improvement can be defined in terms of an improvement quality, quantity, ethics, time, creative capacity, innovation, etc. Organizational performance is all about how people work together, co-creating the processes, practices, norms, standards, and environment of the organization. Therefore, understanding how human capital transformation impacts organizational outcomes is fundamental to the discipline of human resource development.

CHAPTER TWO:

REVIEW OF THE LITERATURE

Multiple disciplines, including HRD, economics, management, psychology, sociology, and education have produced research on capital, value creation, organizational performance practices, and employee attributes. Therefore, this literature review is cross-disciplinary. In this chapter, the first section provides an analysis of the relationships between the different capital domains (e.g., the definition, measurement, and theory of capital) within different historical contexts. This analysis is conducted at both the organizational and individual level, and provides information that leads to an understanding of what is valued in the work context, and how it is managed. The second section of this chapter provides a review of the organizational performance literature and describes the relationship between performance drivers and value creation. Performance drivers are viewed as processes and practices embedded in organizations that act on human capital. This section provides information that leads to an understanding of the relationship between organizational processes and value creation. The third section of this chapter provides a review of the human resource, organization development, and management practices used by organizations to create value. This section provides information that leads an understanding of how organizations currently manage the value creation process for sustained performance. Next, building upon the evidence provided above, a conceptual framework for integrating the various perspectives is presented. Finally, the last section examines the theory-building literature relevant to HRD.

What is valued in the work context?

Organizational level

Since Adam Smith (1776) wrote "An Inquiry into the Nature and Causes of the Wealth of Nations," subsequent scholars have been studying how people work together to create value and/or accumulate wealth. Organizations choose to invest in processes that seem to cause or enable increases in wealth and value (Swanson & Holton, 1999). However, the investment patterns have changed over time. The following figure provides an overview of the change in the definition, measurement, and theory domains of capital since the emergence of the capital economy.

Table 2.1 Evolution of Capital Domains: Definitions, Management, and Theory

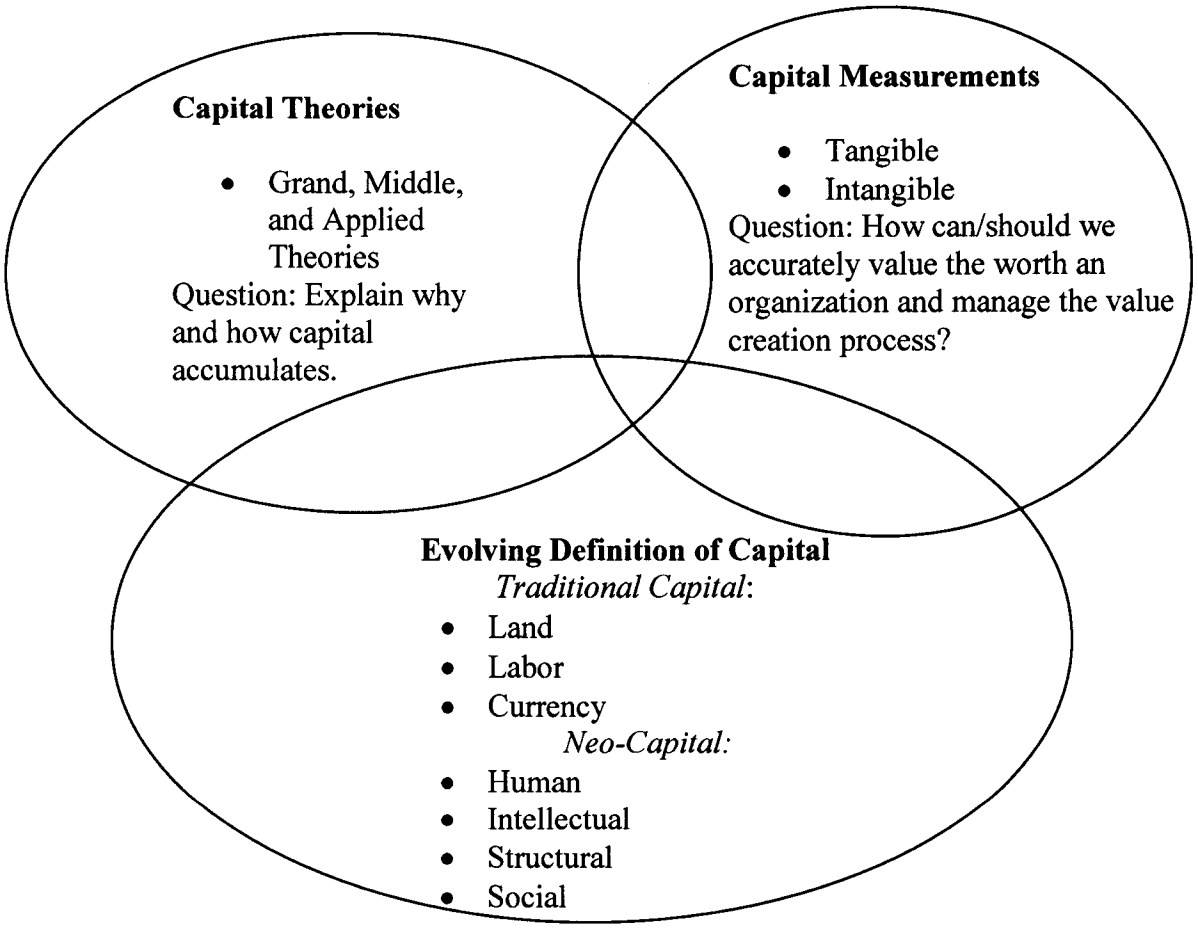
Name	Historical Period	Definition Domain	Management Domain	Theory Domain / Investment Focus
Adam Smith	Pre-industrial economy	Land Labor Capital (currency)	Accounting for the Wealth of Nations	Concerned with understanding the impact of the division of labor on work processes. Grand theory that pre-dates economics: relatively unconcerned with investment.
J.S. Mill	Industrial economy	Land Labor Capital (currency)	Intersection of politics and economics: role of government in capital management	Concerned with the relationship between the economy, government, and society. First political economist; concerned with balanced investment in business, government, and society. Grand political economic theory.
Karl Marx	Industrial economy	Land Labor Capital (currency) Surplus Value	Effects of owning modes of production; inequality of capital distribution within society due to surplus value of labor being reinvested in traditional capital assets.	Concerned with the effects of capitalism in creating a class-based society. Grand political economic theory. Concerned with the negative consequences to individuals and society of unequal investment patterns (e.g., investing in traditional assets only leads to polarization of wealth).
Gary Becker	Pre-knowledge economy	Land Labor Capital (currency) Human Capital (education)	Predict and explain behavior of firms and individuals regarding training & development expenditures. Illustrated positive effect of investing capital into people.	Concerned with explaining the connections between education, profit, and earnings. Mid-level and applied economic theory. Concerned with understanding how investments in human capital (T&D) provide returns.

Name	Historical Period	Definition Domain	Management Domain	Theory Domain / Investment Focus
Kaplan & Norton	Knowledge economy	Land Labor Capital (currency) Human Capital (education & training, expertise, process)	Management tool to accurately value business organizations in order to make sound investment decisions.	Concerned with providing business leaders with a methodology that accounts for intangible assets. Not a theory; management tool. Concerned with providing information to management responsible to invest in human capital (T&D, OD) for maximum impact.
Edvinsson & Malone	Knowledge Economy	Land Labor Capital (currency) Human Capital (as above) Intellectual Capital	Management tool that accounts for organizational knowledge, customer satisfaction, employee morale, innovation, trademarks in order to accurately estimate the future value of a business organization.	Concerned with the future value of a company: how to incorporate elements of intellectual capital into future financial projections and valuations. Not a theory; management tool. Concerned with understanding how current investments in neo-capital (T&D, OD) create future value.
Fitz-Enz	Knowledge Economy	Land Labor Capital (currency) Intellectual capacity	Management tool that accounts for intellectual capacity (which contains intellectual property, process & culture, relational capital and human capital).	Concerned with understanding and then measuring how organizational, relational, and human data relate to one another. Not a theory; management tool. Like Kaplan & Norton, concerned with providing information to managers responsible to invest in human capital (T&D, OD) for maximum impact.
Lin	Knowledge Economy	Land Labor Capital (currency) Neo-capital (human, cultural, social)	Intersection of sociology and economics.	Concerned with understanding, predicting and explaining the different levels and types of resources found in social relationships. Mid-level theory. Not particularly focused on investment issues; however, implied in the theory is the expectation of future benefits contingent on actions today.

Table 2-1 illustrates the deep changes in the domains of capital over time. The changes are triggered by the evolution of the economy through changes in the economic, technological, societal, and political arenas. Using a systems perspective (von Bertalnaffy, 1968; Kauffman, 1980) a change in one domain will impact the others. Historically, as the environment has changed, there have been resulting changes in the definitions (Becker, 1963; Blair & Kochan, 2000; Lin, 2001), measurement methods (Fitz-enz, 1999; Kaplan & Norton, 1996; Edvinsson & Malone, 1997) and capital

theories (Marx, 1859; Mill, 1848;Becker, 1993; Lin, 2002). These changes are a direct result of the changing investment patterns of business organizations. The following figure conceptually illustrates the relationship between the theory, measurement, and definition domains of capital.

Figure 2.1 Systems Perspective of Capital Domains



The above figure illustrates the relationships between the theory, measurement, and definition domains of capital. This figure can be used to 'make sense' out of the evolution of capital over time. As indicated in figure 2-1, when a new definition, measurement tool, or theory emerges at some point in time, subsequent changes flow through to the other domains. Systems research provides an accepted academic tradition

for interpreting these relationships as subsystems of the capital domain (von Bertalnaffy, 1968; Kauffman, 1980). In addition, and of primary importance for this research, the figure can also be used to forecast or predict changes in the domains of capital. For example, because of the abundance of research demonstrating that the primary value creator in today's economy is intangible capital (Lesser, 2000; McElroy, 2003; Blair & Kochan, 2000; Burton-Jones, 1999), one could predict that new theories and measurements methods will continue to emerge. The increasing value of intangible capital to the organization has and will continue to cause changes in capital measurement methods and theory.

Historically, organizational investment patterns have been guided by these value creation drivers. W*here investment in tangible assets used to bring competitive advantage and sustained success, now investment in intangible assets are the only way to accomplish that objectiv*e (Nooteboom, 2002; Nonaka & Takeuchi, 1995; Adler & Kwon, 2002; Hand & Lev, 2003). During the industrial economy, the value creation drivers were machines and equipment. Today, the value creation drivers are people (Fitz-enz, 2000). Business organizations invest in whatever value creation drivers will create conditions for competitive advantage and success. Organizational investment behavior, therefore, has remained constant during the industrial, technological, and now knowledge revolutions. The value drivers themselves may change, but the investment patterns are uniform. The behavior illustrates what is valued by the organization: competitive advantage and sustained success (Porter, 1979). In today's knowledge economy, therefore, organizations place the highest value on the intangible capital drivers of performance: human, intellectual, social, and structural capital (Hand & Lev, 2003; Blair

& Kochan, 2000). In fact, it has been estimated that "private U.S. firms invested at least $1 trillion in intangibles in 2000, a level that roughly equals the gross investment in corporate tangible assets" (Hand & Lev, 2003, p. 4).

Individual Level

The history of T&D, OD, and management science provides a comprehensive understanding of what individuals value in work environments (Rothwell, Sullivan & McLean, 2000; French & Bell, 1999; Cummings & Worley, 1993; Swanson & Holton III, 1997; Chalofsky, 2003). Like the previous discussion of organizations and value, this section assumes that value can be inferred by action: individuals invest time, effort, or skills in activities that they value. Individuals decide what action to take based on a decision-making process that can be either utilitarian (Homans, 1976) or based on social identity (Tajfel & Turner, 1985). The utilitarian perspective describes an individual's cost benefit calculation, and the social identity perspective "suggests that individuals identify themselves as members of multiple social groups...group membership results from perceptions rather than from roles that yield more rewards than costs" (Polach, 2003, p. 62).

In the work context, individuals respond to a variety of incentives and practices that impact work performance: *employees themselves determine their amount of involvement in the organization.* Like organizations, individuals make their decisions based upon what they value and seek to maximize the return on their investment (Becker, 1993) or conform to the social group with which they identify themselves (Polach, 2003).

Organizations have been described as social communities (Kogut & Zander, 1996), therefore it is appropriate to apply the social identity theory to employee

involvement at work. Employee work behavior does not have to be explained only by a rational cost/benefit calculation, as per the utilitarian perspective. Employee learning and performance has been demonstrated to improve by the creation of communities of practice (Lesser & Storck, 2001) and by the development of diverse social networks (Reagans & Zuckerman, 2001). Using social network analysis, Liebeskind, Oliver, Zucker & Brewer (1996) conducted a study to assess the impact of different forms of social networks on the knowledge creation of biotechnology firms. Their network analysis demonstrated that "social networks play an important role in promoting organizational learning and in fostering organizational flexibility" (Liebeskind, et. al, 1996, p. 438). Also using social network analysis, work performance has been demonstrated to vary by interaction patterns (Brass, 1981, 1985), by network centrality (Mehra, Kilduff & Brass, 2001), and by number of ties in the network (Roberts & O'Reilly, 1979).

In addition to the focus on social identity and social network, contemporary literature argues that individuals place a high value on meaningful work (Chalofsky, 2003) and that companies rush to implement reward and benefit schemes to meet worker's expectations (Polach, 2003). This literature is an outgrowth of the humanist/self actualization perspective of Maslow (1954, 1971), Rogers (1961), and McGregor (1960). According to Chalofsky (2003) the employee of today has "an inherent need for a work life that they believe is meaningful" (p. 70).

Historically, the relationship between employee involvement and performance at work has been studied since 1926, when Mary Parker Follett wrote an article "advocating participative leadership and joint problem solving by labor and management" (French &

Bell, 1999, p. 63). Unfortunately, however, her work was not published until 1941. Regardless, experiments in both the United States and England during the years 1927 to 1960 focused on people and performance issues.

The Hawthorne experiments (1927 to 1932) provided researchers with an understanding of what employees value in work environments, albeit in an unforeseen way. These experiments found interesting connections between work performance and work environment. Employees valued an environment that provided both physical and psychic 'comfort,' and would perform at higher levels when these comforts were met. "The research demonstrated the *primacy* of social factors on productivity and morale... (and) group norms had more powerful effects on productivity than economic incentives" (French & Bell, 1999, p. 63).

In England, the Tavistock experiments in the 1940s were the first systematic experiments to manipulate both the social and technical aspects of work processes and systems (Cummings & Worley, 1993). The impact of these experiments remains today, and, as reported in French & Bell (1999) generated influential research on work design (Hackman & Oldham, 1980); motivation and hygiene factors (Herzberg, 1968; Herzberg, 2003; Lawler III, 1973); and group performance (Hackman & Morris, 1975; Cummings, 1981; Susman, 1976).

At about the same time of the Tavistock experiments, Kurt Lewin began the laboratory training process at the Research Center for Group Dynamics at the Massachusetts Institute of Technology in 1946. Instead of focusing on the socio-technical components of work, Lewin focused on the interpersonal aspect of groups. He and his cohorts found that participants valued two things: 1) the feedback from group

interaction and 2) the potential to transfer new knowledge to work (Cummings & Worley, 1993). These findings paved the way for the future team building research (French & Bell, 1995; Poell & Van der Krogt, 2003).

In modern times, individuals seem to value things like profit sharing and group incentives more for their "symbolic value (rather) than their intrinsic value" (Blair & Kochan, 2000, p. 9). Individuals also value greater task complexity (Ben-Ner, Burns, Dow & Putterman, 2000), and respond positively to equity-based compensation practices (Blair & Kochan, 2000).

Because of the increase in the value of human capital to the organization, organizations are paying much more attention to understanding what employees value at and from work. Accomplishing organizational goals depends on "the willingness of persons to contribute efforts to the cooperative system" (D'Intino, Shepard, & Wolfle, 2002, p. 1). Many theories have been developed in order to understand how 'willingness' is nurtured, including organizational citizenship behavior (Smith, Organ & Near, 1983). At the root of these different types of explanations is an underlying premise that employees value empowerment (e.g., ability to fully participate in decision making), norms of reciprocity (e.g., social participation), fairness, and loyalty (D'Intino, Shepard, & Wolfle, 2002).

How is Value Created in the Work Context?

Value Creation Drivers

The term neo-capital has been introduced (Lin, 2001; Storberg, 2002) to describe the intangible components of capital, including human, structural, intellectual, and social

capital. Neo-capital is a driver of performance in today's economic environment (Swanson & Holton III, 1997; Nonaka & Takeuchi, 1995; Nooteboom, 2002; Adler & Kwon, 2002; Nahapiet & Goshal, 1998). In fact, neo-capital is increasingly viewed as *the primary* driver of value creation in today's knowledge economy (Hand & Lev, 2003; Nooteboom, 2002; Shapiro & Varian, 2003). This driver of value creation is embedded in organizational practices and is the motor that drives the transformation of human capital into organizational output (Nakamura, 2003; Van de Ven, Polley, Garud, & Venkataraman, 2001; Nooteboom, 2002). Following is an analysis of the different types of neo-capital embedded in organizational processes that create value. First, an analysis of human capital is presented. Building on that foundation, the different types of neo-capital performance drivers including structural, social, and intellectual capital are examined in relation to their impact on human capital.

Human Capital

Although Schultz (1961) and Becker (1993) are traditionally thought of as the fathers of human capital, traces of the concept of human capital and its importance to business and society as a motor of value creation can be found in the work of Adam Smith and J.S. Mill. However, it wasn't until the early 1960's that scholars began to develop and test new theories of capital in order to understand how value is created through human activity.

Schultz (1961) was the first to publicly argue (in his presidential address at the 1960 American Economic Association meeting) that human resources should be considered a form of capital.

> "The failure to treat human resources explicitly as a form of capital, as a produced means of production, as the product of investment, has fostered the retention of the classical notion of labor as a capacity to do manual work requiring little knowledge and skill, a capacity with which, according to this notion, laborers are endowed about equally." (Schultz, 1961, p. 3).

Schultz's explicit inclusion of human resources as a form of capital expands the classical Marxian definition of capital. Both are seen as investments with expected returns. However, the expanded definition does differ in four significant ways: first, human capital focuses on the laborer; second, the laborer can be seen as an investor; third, the laborer is now motivated to acquire skills; and fourth, in classical capital theory posits capital is the outcome of production and exchange processes. In neo-capital theory, "nothing is explicitly delineated concerning the production and exchange processes...human capital should be assessed as a function of *return or yield* to the laborer." (Lin, 2001, p. 12).

As a scientific inquiry, however, human capital theory owes its existence to the economist Becker (1993) who tested the various components of human capital, including health, migration, and education. Becker conducted a study focusing on "activities that influence future monetary and psychic income by increasing resources in people. These activities are called investments in human capital." (Becker, 1993, p. 11).

Since Becker's (1993) seminal work, research on *human* capital has sought to understand how different types of investments in human resources (e.g., training and development) explain changes in organizations, societies, or nations. This perspective understands human productivity in terms of economic exchange. In this view, the skills

possessed by individuals are valuable human capital that can be offered to employers with an expectation that something (compensation, rewards, feelings of accomplishment) will be returned. These skills are ***owned by the individual***, and successful firms understand that they can only borrow them to accomplish organizational goals.

The human capital view analyzes firm investment in training and development using economic methods and assumptions. For example, many economists understand that a firm's investment in human capital "proceeds in the face of a considerable degree of ignorance of how it will turn out and whether the hoped-for future gains will indeed materialize" (Winston, 1999, p. 15). Economic theory posits a decreasing rate of return on investments (Provo, 2000), assumes that risks should be avoided or minimized when investing (Becker, 1964), and often places analyses on "fully informed, perfectly competitive, profit-maximizing, market clearing" industries (Winston, 1999, p. 22). While these economic assumptions do not always explain neo-capital, economists and economic exchange research continue to works towards understanding how different types of investment in capital relate to some type of outcome. Following is a selection of economic exchange research focusing on investments in human capital.

Table 2.2 Review of Select Human Capital Literature

Author	Explaining the relationship between.....	Key Findings
Becker (1964, 1993)	Investments in education and earnings, health, migration	Firms should invest in specific training because the inherent risk (e.g., independence) and mobility of human capital precludes prudent investments in general training
Schultz (1961) Denison (1962) Bowman (1964)	Investments in education and economic growth	There is a positive relationship between education and economic growth
Bowman (1980)	Investments in education and economic development	There is a positive relationship between education and economic development
Chiswick & Mincer (1972) Mincer & Polachek (1974)	Investment in education and distribution of income	There is a positive relationship between education and income
Fitz-Enz (2000); Bassi, Ludwig, McMurrer, & Van Buren (2002)	Investment in human capital (education) and profit	There is a positive relationship between firm investment in human capital (e.g., training and development) and profit
Edvinsson & Malone (1999)	Investment in intellectual capital and firm value	There is a positive relationship between firm investment in intellectual capital (e.g., human capital plus related structures, processes and technologies) and firm value
Galunic & Anderson (2000)	Investment in human capital (e.g., training and development in **general** skills) and employee commitment	There is a positive relationship between investments in general skills and organizational commitment
Zucker & Darby (2003)	Investment in intellectual human capital and founding new companies	There is a positive relationship between investment in intellectual human capital (e.g., human capital plus related structures, processes, and technologies) and creating new companies. Example: biotechnology
Bartel (1995); Lynch (1992); Black & Lynch(1998)	Investment in training and wage growth	There is a correlation between amount of training and growth in firm wages

These theories provide examples of research from an economic exchange perspective. The various outcomes include profit, efficiency, innovation, market growth,

competitive advantage, health, migration, development, etc. Since the rise of the knowledge economy these theories have contributed a great amount to our understanding of the 'soft' types of resources that generate value. However, these theories do not address the emerging nature of human capital production, nor do they focus on the processes of human capital transformation from latent/existing skill to productive/higher level skill.

Contemporary research on human capital has developed the concept more completely over the last forty years. In the business context, human capital is more than the sum total of knowledge, skills, and attitudes of employees: "it also must capture the dynamics of an intelligent organization in a changing competitive environment...(and) the creativity and innovativeness of the organization" (Edvinsson & Malone, 1999, p. 34-35). Human capital is valued by organizations because "it is a source of innovation and strategic renewal" (Bontis, 2002, p. 631). According to Bontis (2002), human capital is a subdomain of a firm's intellectual capital. Other scholars including Fitz-Enz (2000), Edvinsson & Malone (1999), and O'Connor (2000) identify the immutable relationship between human capital and other forms of value creation (e.g., intangible capital). However, Bontis (2002), provides a theoretical framework for understanding the relationships that other scholars do not address. Using Kogut and Zander's (1992) ideas of higher order organizing principles, Bontis (2002) presents a conceptualization of the relationship between human capital (first order construct) and intellectual capital (second-order multi-dimensional construct). These theoretical constructs add to the existing body of knowledge on human capital and enable further theoretical development.

Structural Capital

Organization processes, which this study posits transforms individual human capital, have also been defined in terms of capital (Hand & Lev, 2003). Processes include job routines involving employees (human capital) and technology. This technology has been considered the structural capital of the firm: "the hardware, software, databases, organization structure, patents, trademarks, and everything else of organizational capability that supports the employee's productivity..." (Edvinsson & Malone, 1997, p. 11). Structural capital, too, is integrally connected with human capital. The databases used to store and transmit knowledge are developed by and further develop human capital. This type of capital is owned and managed by the organization and it impacts on individual human capital. This view represents those scholars who focus on how technology enhanced work processes can improve the collective human capital by dispersing, transforming, and codifying it for sharing. Anything that "supports employee's productivity" (ibid., p. 11) can be considered relevant in this view. From this perspective, investments in structural capital are expected to produce a return for the organization. By extension, investments in structural capital can also produce a return on an individual's human capital because structural capital also develops an individual's knowledge and skills (Bontis, 2002).

Social Capital

An exclusive focus on structural capital has been criticized because it "fails to take into account a...major component of intangible value now commonly recognized on other fronts: social capital," (McElroy, 2002, p. 30). The concept of social capital is not new. The first recorded use of the term was in West Virginia in 1916, when an educator

was describing how to effectively develop local schools (Lin, 2001). Since that time the concept has been used in numerous types of settings and the definitions are diverse—ranging from resources embedded in networked relationships (Lin, 2001), to an ability to secure benefits through membership (Portes, 1998), to a means of enforcing norms of behavior (Walker, Kogut & Shan, 1997). Social capital is viewed as an extremely complex transformative phenomenon that continues to challenge social scientists from many disciplines.

Theories and models of social capital have been used at various times in organization science to explain exploration and exploitation, change and stasis, cooperation and competition, and resource generating and resource constraining. As prior research has demonstrated, social capital can act as a catalyst for organizational change (Tsai & Ghoshal, 1998) and as an impediment to it (Gargiulo & Benassi, 2000). Social capital can encourage collaborative work groups (Walker, et al 1997) and encourage individual attitudes of non-collaboration in firms with large stocks of social capital (Maskell, 2000). Social capital can help organizations create new knowledge (Nahapiet & Ghoshal, 1998) but can make group projects longer to complete (Hanson, 1998a, 1998b). Further, by group closure, can threaten the survival of an organization by disabling the larger group's ability to adapt, learn, and grow (Foley & Edwards, 1996). Social capital thus presented is a paradox: at the same time it is a benefit for collective action *and* a constraint on acceptance of new ideas; it is a potential source of innovation and knowledge creation *and* a restriction on access to opportunities and new ideas. The paradox of social capital, as described above, is an outcome of complex social processes that scholars have yet to fully uncover.

For those scholars who have attempted an understanding, the definitions, processes, and outcomes have been diverse. For example, Coleman (1988) asserted that social capital is a phenomenon that improves information flow (that can lead to knowledge creation), produces obligations and expectations (that can lead to trust), and provides norms accompanied by sanctions (that can lead to collaboration). On the other hand, Portes (1998) asserted that social capital is a phenomenon that restricts access to opportunities, restricts individual freedom, and exerts social control. However, both of these treatments do not explain how the different factors and processes of social capital determine whether or not 'positive' or 'negative' outcomes for the organization will be produced.

Intellectual Capital

The intellectual capital movement has been called the Trojan horse for the labor movement (O'Connor, 2000). The mythical Trojan horse was used by the Greeks to gain access to Troy after they had been dismally repulsed for ten years. According to lore, the Greeks built a hollow horse, filled it with warriors, and presented the horse to the city of Troy as a peace offering. Citizens of Troy accepted the horse and subsequently were defeated by the surprise attack from within. Today, a Trojan horse can be seen as a secret weapon that may generate favorable outcomes for gift givers.

In today's economy, the gift givers are employees bestowed with the skills, knowledge, and attitudes that are valued by organizations (O'Connor, 2000). Because of the value of human capital, corporations are finding the traditional employer/employee relationship is changing (Beck, 2003). Employees demand more autonomy, ownership, and hold employers more accountable than in the past (Hand & Lev, 2000). Employees

of the future may be considered "knowledge nomads" (Bontis, 2002, p. 9) who are highly employable and self-directed. The people concerned with understanding and managing this emerging new relationship examine several forces, including political, social, and economic. From these scholars, the intellectual capital (IC) movement (O'Connor, 2000) has grown. This section describes the IC movement and its relationship to human capital.

In the early 1990s, IC as a concept began to be researched and measured (Bontis, 2002). In 1995, the Skandia Corporation published the first ever IC annual report for its stockholders because traditional annual reports did not reflect the company's true value (Edvinsson & Malone, 1999). IC is "the study of the roots of a company's value, the measurement of the hidden dynamic factors that underlie the visible company of buildings and products" (Edvinsson & Malone, 1999, p. 11). Skandia developed metrics that measured the impact of human knowledge and innovation (e.g., human capital) on a company's true value. To Skandia, intellectual capital is the combination of human capital and structural capital:

> Human capital is "the combined knowledge, skill, innovativeness, and ability of the company's individual employees to meet the task at hand. It also includes the company's values, culture, and philosophy. Human capital cannot be owned by the company." Structural capital is "the hardware, software, databases, organizational structure, patents, trademarks, and everything else of organizational capability that supports those employees' productivity—in a word, everything left at the office when the employees go home. Structural capital also includes customer capital, the relationships developed with key customers.

Unlike human capital, structural capital can be owned and thereby traded." (Edvinsson & Malone, 1997, p. 11).

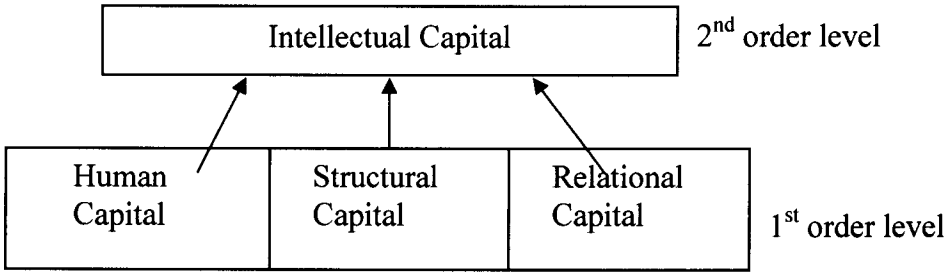
Edvinsson & Malone argued that traditional accounting practices were not able to accurately inform investors of the true value of a business organization, and developed an IC measurement system that "tracks through time the flow of an organization's non-tangible asset investments as they consolidate and successfully or unsuccessfully convert from debt to assets that appear on the balance sheet" (Edvinsson & Malone, 1997, p. 206). The non-tangible assets in the Skandia model included business relationships within networked partnerships, customer loyalty, employee knowledge & competencies, company commitment, and the character and values of the company. The outcome of their work was the Skandia Navigator, a tool that was "the first systematic attempt to uncover these factors and to establish the key indicators for establishing their metrics" (Edvinsson & Malone, 1997, p. 20).

In addition to business practitioners like those from Skandia, researchers from many disciplines have studied IC, including management, accounting, information technology, sociology, psychology, and HRD. These different perspectives have different goals: to manage, count, create information systems for, develop, or balance power between the intangible assets that drive performance (Bontis, 2002). These competing goals and perspectives have acted to stretch the concept of IC, making it difficult to operationalize with any scientific rigor. Like social capital, IC has been an extremely complicated socio-technical concept to understand.

Bontis (2002) offers arguably one of the clearest theoretically based conception of how IC relates to other types of intangible capital. As described briefly in the preceding

section on human capital, Bontis relies on Kogut and Zander's (1992) work on higher-order organizing principles. Bontis asserts that intellectual capital is a second-order multidimensional construct with three subdomains: 1) human capital; 2) structural capital; and 3) relational capital. Further, Bontis connects intellectual capital with organizational learning because "organizational learning...has been thought of as the flow of knowledge in a firm; it follows, then, that intellectual capital is the stock of knowledge in the firm. To marry the two concepts, it may be useful to consider intellectual capital as the stock unit of organizational learning" (p. 29). Following is the model of IC per Bontis:

Figure 2.2 Conceptualization of Intellectual Capital



Adapted from Bontis (2002), p. 31.

In figure 2-2, human capital is considered to be the knowledge, skills, and attitudes held by employees, structural capital consists of the organizational routines that transform human capital into organizational output, and relational capital is the knowledge embedded in relationships between the employees and the outside environment (e.g., customers, suppliers, associations, etc.).

Fitz-enz' (2000) research also follows a similar tripartite explanation of what he terms as the *intellectual capacity* of the firm. He argued that three types of data (organizational, relational, and human) "must be integrated," and once we have begun to

"understand how the three relate to one another, support and drive one another, we have started down the track to intellectual capacity" (Fitz-enz, 2000, p. 22). To Fitz-enz, then, human capital, relationships, process & culture, and intellectual property are all sub-sets of the larger intellectual capital of the firm. While both Fitz-enz and Bontis do not use the term 'social capital' in their work (each use the term relational or relational capital), Fitz-enz does assert "personal relationships are absolutely a competitive advantage" (Fitz-enz, 2000, p. 13). Both Fitz-enz and Bontis seem to think that relational capital is exclusively found in customer, supplier, or other outside stakeholder relations with employees in the firm. According to Bontis (2002), "relational capital represents the potential an organization has due to ex-firm intangibles....the essence of relational capital is knowledge embedded in relationships external to the firm" (p. 35).

How do Organizations Manage the Value Creation Process for Sustained Performance?

HRD Management Role

Based on what they know, organizations will implement transformative processes contingent upon what will give them a competitive advantage. Because of the dynamic nature of the knowledge economy, competitive advantage is integrally connected to knowledge and knowledge management (Nooteboom, 2002; Nonaka & Takeuchi, 1995; Burton-Jones, 2001; McElroy, 2003; Nonaka & Nichiguchi, 2001; Prusak, 1997; Cross & Israelit, 2000; Lesser, Fontaine & Slusher, 2000; Lesser, 2000). "The core question is how to encourage professionals to learn and make better use of their knowledge in

organizational processes" (Poell & Van der Krogt, 2003, p. 3). Implicit in the preceding quote is the assumption that individual human capital must be developed (T&D) and organizational processes must optimize the application of human capital (OD) for organizational success.

Organizations implement T&D and OD interventions for two related reasons: first, to encourage professionals to learn; and second, to encourage professionals to make optimal use of their knowledge at work. According to Swanson and Holton (1999), there are four barriers to T&D and OD interventions that can inhibit learning and applying new knowledge. These barriers need to be effectively managed in order to transform human capital into organizational level output. From the individual employee perspective, T&D and OD interventions are impacted by 1) the *ability* to learn (cognitive and intellectual aspect) and 2) *motivation* to learn (the value placed on learning by the individual determines the level of investment in learning). From a relational perspective between the individual and the work environment, two additional barriers are identified: 3) the individual's *ability* to use the new knowledge (does the job require the application of new ideas?); and 4) the individual's *motivation* to use the new knowledge at work (does the job provide an incentive to use new ideas?).

Based on the above, both *individual* ability and motivation and *relational* ability and motivation can act to impede or encourage the transformation of human capital into desired organizational level output. As described earlier, individuals possess different values, expectations, and abilities that impact the potential value of their human capital as applied in the work context. However, in addition to the individual level, Swanson & Holton (1999) highlight the relational level between the individual and the work

environment that impacts the transformation of human capital into organizational level output. HRD practitioners need to manage these barriers to effectively and most efficiently transform human capital into sustained performance.

HRD strategic role

HRD professionals continue to become more strategic in their thinking and professional scope (Swanson & Holton III, 2001). Because the competitive advantage of organizations is a function of the attraction, development, and retention of human capital, HRD professionals play a central role in the strategic management of organizations. According to Tovstiga & Birchall, who presented research at the 4th World Congress on Intellectual Capital (2001),

> "Strategic management has a key role in managing the firm's internal and external portfolio of knowledge-driven capabilities to match the changing nature of opportunities and challenges in the competitive environment. In order to make the most of its knowledge, a firm must master at least three steps. First, its managers need to 'know what the firm knows.' Then, if that knowledge is strategically relevant and valuable, it needs to be exploited. Finally, new knowledge streams need to be sourced and successfully integrated into the firm's existing portfolio of capabilities" (Tovstiga & Birchall, 2002, p. 104-105).

Based on this perspective, HRD professionals need to focus on three related and iterative strategic processes: 1) delivering the right information to the right people at the right time; 2) quickly and efficiently leveraging the value creation knowledge as it emerges; and 3) integrating (through process improvement and resource allocation) that new value creation knowledge into core business practices.

Conceptual Framework to Integrate Human Capital Transformative Drivers

Overview

The preceding literature review has presented an analysis of the current state of scholarship on the value creation drivers that enable sustained performance in today's economy. In addition, information linking the behavior of firms and individuals to what they each value has demonstrated that firms value competitive advantage and individuals value both utilitarian and social identity rewards. Finally, both the strategic and management HRD responsibilities necessary for sustained performance have been identified. This section integrates these findings into a framework for eventually building a theory of human capital transformation for sustained performance.

Conceptual Framework

Based on the review of literature, three value creation drivers have been identified that combine to conceptually represent an organization's intellectual capital. These drivers are woven into the organizational fabric of the firm and include *human, structural, and social capital.* These three drivers are the catalysts that work together to transform human capital from an individual level competency or attribute and into an organizational level output. This study seeks to understand how HRD impacts the relationships between these drivers *and* seeks to understand the developmental process of human capital transformation.

From this literature review, it is clear that human capital enters into the organization and becomes exposed to the other two value creation drivers. Human capital is transformed by technological and organizational processes (e.g., structural

capital) and formal and informal social networks (e.g, social capital). Depending on the context, HRD management practices will be attempting to guide the transformation to selected ends: innovation, closure, growth, retrenchment, etc. The outcome, when guided by the goal of sustained performance, will benefit both the organization (competitive advantage) and the individual (increased stock of human capital).

Research Questions & Assumptions

1. How does human resource development impact the relationships between human, social, and structural capital?
2. What are the temporal sequences of the process of human capital transformation?

Assumptions about capital

- Human capital is the knowledge, skills, and attitudes that employees possess
- Structural capital is the job routines and technology that support employee productivity
- Social capital is resources embedded in social relationships
- Human capital + structural capital + social capital = intellectual capital

Assumptions about Investment Patterns

- Employees and organizations invest in things they value
- Employees value autonomy, empowerment, and meaningful work
    - Employees use both utilitarian and social identity decision making processes
- Organizations value competitive advantage
    - Organizations use rational cost-benefit decision making processes

Assumption: HRD has management and strategic responsibilities to employees and organizations.

- Management responsibilities: human, social, and structural capital *operations* at the individual, group or department, and organizational levels
- Strategic responsibilities: human, social, and structural capital *strategy* at the individual, group or department, and organizational levels

Theory Building Research

In order to build a theory to explain how HRD transforms human capital for sustained performance, theory building research is necessary. There are multiple theory building methods that have been and continue to be used to build theories to explain and/or predict organizational phenomenon (Van de Ven, in press; Whetten, 2002; Weick, 1995, 1989; Poole & Van de Ven, 1989; Lynham, 2002; Torraco, 2002). This section highlights three key steps to selecting the best theory building method for the theory of human capital transformation through human resource development.

First, the appropriate theory building method "should be dictated by the nature of the theory building being engaged in, and not by the preferred inquiry methodology of the researcher-theorist" (Lynham, 2002, p. 224). From this perspective, the phenomenon under study, as described by the research question, guides the theory building method: "The critical task is to adopt and execute the right research methods for the research question" (Van de Ven, in press, p. 9).

Second, because HRD is an applied discipline, the theory building method selected for this project "must be capable of dealing with issues of application" (Lynham,

2002, p. 225). This means grand or mid-level theory building methods are not appropriate for creating a theory of human capital transformation through human resource development. Any method selected must involve some type of testing in the real world. For example, Dubin's (1978) theory building method proposes empirical indicators (like variables), hypotheses, and testing to meet the application requirement. Van de Ven's (in press) method relies heavily on the research design component of theory testing in order to solve real-world problems.

Finally, the theory building methods should be analyzed to assess their potential value in terms of the research question and the type of new knowledge that will be generated using a selected method. For example, Torraco (2002) compared three different theory building methods focusing on the same topic: work groups and teams. Torraco found that each theory building research method produced different knowledge and contributed valuable, but different, insights. Most importantly, he explained that certain theory building methods are better for some phenomenon than others. If the theory builder wants to create a theory of an emergent social phenomenon, then grounded or social constructionist theory building processes would be better than a quantitative method. Likewise, if the theory builder wants to generalize across populations, then the quantitative or meta-analytic theory building processes would be better than case study or grounded methods.

The next chapter applies these three selection criteria to create a theory of human capital transformation through human resource development.

CHAPTER THREE:

METHODOLOGY

The purpose of this chapter is to describe the steps that were undertaken to identify, analyze, and select the theory research method for this study. The first section describes the process that was followed to identify the various theory research methods in the literature. Building upon that research, the second section describes how the different methods were analyzed and selected for this study. The third section describes the five phases of the selected method in detail. The bulk of the third section is devoted to the first and most critical phase of theory research, namely, conceptual development. The fourth and final section links the selected theory research method to the phenomenon of human capital transformation.

Theory Research

This section describes the process that was undertaken to identify the most appropriate theory research method for this study. Following the description, details about the theory research method selected for this study are presented. Based on this investigation of methodological alternatives, this study will use Lynham's (2002) General Method of Theory Building Research in Applied Disciplines to develop a *theory of human capital transformation through human resource development.* The General Method offers a five-phased, recursive theory building process that is suitable for applied disciplines and can incorporate multiple paradigms.

As suggested by the General Method, specific theory research contributions from other authors are incorporated into the generic General Method. It will be demonstrated that each of the selected contributions identified in the literature from other authors does in fact represent one or more of the General Method's five major phases of theory building. These contributions range from concrete (e.g., how to specify appropriate levels of analysis when building a theory) to abstract (how to incorporate tensions in research to illuminate contradictions, paradoxes, or alternative conceptualizations of the phenomena.)

As described at the end of chapter two, three key selection criteria helped to guide the selection of the most appropriate theory research method for this study. The three criteria were: 1) the theory research method should be dictated by the *nature of the theory* being created and not based upon the researcher's preferred paradigm (Lynham, 2002; Van de Ven, in press); 2) the theory research method for applied disciplines (like HRD) should be *testable in the real world* (Lynham, 2002; Van de Ven, in press; Whetten, 2002; Dubin, 1978); and 3) the theory research method should be evaluated in terms of the *potential value* (in terms of new knowledge) it generates (Van de Ven, in press; Weick, 1989; Torraco, 2002).

To select the research method for this study, a literature review on methodology was conducted. The review included journal articles (primarily from the Business Source Premier database) and scholarly work by often-cited scholars (e.g., Dubin (1978); Patterson (1983); Poole, Van de Ven, Dooley & Holmes (2000); Torraco (1997, 2002); Pentland (1999); Barley (1990); Weick (1989, 2001); Denzin & Lincoln (2000); and the

entire special issue of the Academy of Management Review, Vol. 14 No. 4). Keywords used in the search included theory, theory building, theory and building process.

Based on the selection criteria described above, it was found that the disciplines most appropriate for HRD theory research included HRD, management or organization science, education, psychology, and sociology. The articles and books were reviewed and then placed in different categories of contributions in order to sort, compare, and evaluate the different theory research methods. The categories that emerged were 1) *complete, specific, and detailed* theory building processes based on a particular paradigm (e.g., Dubin, 1978; Eisenhardt, 1989; Strauss & Corbin, 1987) 2) *complete and general* theory research processes that could incorporate multiparadigm methods (e.g., Van de Ven, in press & Lynham, 2002); and 3) *limited, specific and detailed* contributions (including Weick, 1989, 1999; Poole & Van de Ven, 1989; Gioia & Pitre, 1990; Pentland, 1999; Bourgeois, 1979; Jick, 1979; Lewis & Grimes, 1999; Whetten,1989, 2002; Christensen & Raynor, 2003; Barley, 1990) focusing on one or more major aspects of the theory research process, or a single paradigmatic method. (Note: the term limited in this situation does not imply 'less than adequate.' Rather, it means that the contribution has been judged to offer significant insight, analysis, or explanation of a *portion* of the overall theory building process).

After sorting the literature in to appropriate categories, the three selection criteria were applied to the findings of the literature review. To repeat, the three criteria are: 1) the phenomenon under consideration guides the selection of a theory research method and the use of appropriate paradigm research method(s); 2) the theory research process must include the component of testing in the real world; and 3) the theory research

process must be evaluated in terms of the value it may generate. Because this study seeks to create a theory to understand *how* human capital is transformed through HRD, the contributions judged to be most appropriate were those that focus on *process* rather than exclusively on *outcome or variance.* In other words, the nature of the phenomenon of human capital transformation guided the selection of which theory-building process was most appropriate.

Finally, because this study sought to complete all of the main components of applied theory building, including testing, those contributions that offered limited or component-specific theory building insights were not selected. Ultimately, two theory-building methods met each of the above criteria in general, and further analysis was conducted on these two to understand 1) Which theory-building process would be the most appropriate for HRD? And 2) Which theory-building process would possibly generate the most value for people interested in human capital transformation?

Based on a comparative review, both Van de Ven's (in press) Professional Science Diamond Model and Lynham's (2002) General Method offered complete theory building methods that are appropriate for understanding process phenomenon like human capital transformation. In addition, it was found that Jick (1979); Weick (1989); Whetten (2002); Dooley & Van de ven (1999); Torraco (2002); Egan (2002); Dooley (2002); Yang (2002); Turnbull (2002); Weick (1989, 1992, 1995, 1999); Doty & Glick (1994); Pentland (1999); Poole & Van de Ven (1989); Gioia & Pitre (1989); George & Jones (2000); Zaheer, Albert & Zaheer (1999); Osigweh (1989); Lazarfeld & Menzel (1969); Dansereau, Yammarino, & Kohles (1999); Rousseau (1985); Chan (1998); Christensen & Raynor (2003); and Eisenhardt (1989) offered methods or concepts that contributed to

certain segments of the overall theory building processes that were identified in the Van de Ven and Lynham models.

Both the Diamond Model and the General Method describe a general theory process of researching theories for applied disciplines. These two research methods were compared closely in order to select the one most appropriate for this research study. The General Method provides a very clear and adaptable *framework* for the theory research process, while the Diamond Model provides more robust *information* about what each part of the research process should do. The General Method explicitly declares that the model can serve multiple paradigms and research methods (see, for example Turnbull, 2002; Yang, 2002; Dooley, 2002; Egan, 2002; Torraco, 2002). On the other hand, the Diamond Model, while advocating a multi-paradigm perspective during defined portions of the theory research process, ultimately suggests that an empirical/analytical logic should be used to test and apply the findings of the theory. The Diamond Model has been critiqued for its reliance on linearity (Mahdjoubi, 2001) and Van de Ven, the creator of the Diamond Model, routinely relies on a variance, or an empirical-functional approach for research (see, for example, Dooley & Van De Ven (1999) on causality in dynamical systems; Poole & Van de Ven (1989) on paradox in theory development; Poole, et. al (2000) on the four criteria that research on change and development should satisfy, and Van de Ven (in press) on how the research solution to confirm the theory relies on empirical findings). Based on these distinctions and the three selection criteria, the General Method was selected for this research study because of the explicit framework for an iterative theory research process using a multi-paradigm perspective and multi-paradigm logic.

The General Method

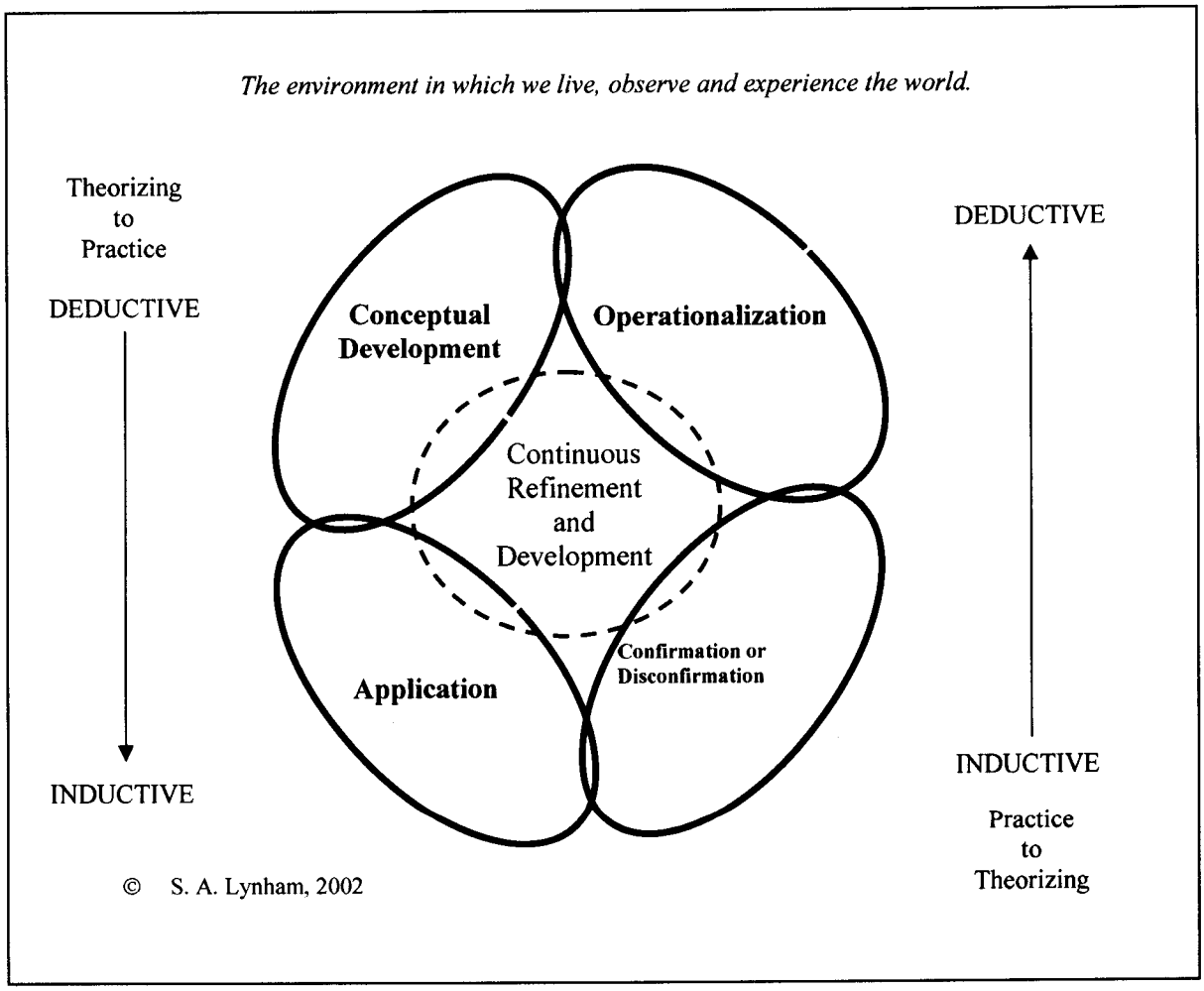
The General Method illuminates a basic process that can be found in most, if not all, theory research attempts regardless of the purpose or paradigm of the theory (Lynham, 2002). The intent of the General Method is to make explicit the fundamental, generic theory research phases found in all theory research processes. It is evident that Lynham (2002) wanted to develop a universal theory building research method able to incorporate different research perspectives. Lynham argued that the question of *what* paradigm to use is secondary to the question of *which* paradigm is most appropriate for the phenomenon under study and the purposes of the research.

The General Method leaves the important substantive decisions up to the theorist-researcher and does not a priori suggest than one perspective is 'better' than another. The framework is clearly articulated, and the theorist is given a comprehensive and adaptable heuristic to follow. The General Method follows the suggestions of earlier multi-paradigm scholars (including Gioia & Pitre, 1989; Lewis & Grimes, 1990; and Jick, 1979) by urging theorists to make explicit their paradigmatic assumptions and language.

The General Method "can be framed by way of five interdependent, interacting phases of theory building, namely: conceptual development, operationalization, confirmation/disconformation, application, and continuous refinement and development of the theory" (Lynham, 2002, p. 22). The method incorporates both deductive and inductive logic, is recursive and iterative, and includes alternative ontological and epistemological perspectives. The five phases, or components, can occur on any particular order, and "each complete applied theory-building research effort, regardless of the specific theory-building method employed by the researcher-theorist, involves, in

some form, these five general theory-building phases..." (Lynham, 2002, p. 230). The General Method identifies the five universal theory research phases and provides an explicit invitation to incorporate specific research methods into each universal phase as appropriate.

Figure 3.1 The General Method of Theory Building Research in Applied Disciplines



In other words, the General Method provides a *framework* on which theorists can 'hang" appropriate research building method(s) (Storberg-Walker, 2003). This framework is, in essence, the bare structure of theory research in applied disciplines. Like the bare framework of a house, the contractor/owner must then satisfy all the detailed components

of the house by selecting the appropriate walls, floors, roof, etc. in order to complete the home. Similarly, the bare structure of the General Method leads researchers to seek out specific theory research methods to satisfy each of the five universal components, or phases, of the theory research method. The following sections will illustrate how the General Method is used for *guidance* and as a *framework* to build a theory of human capital transformation. Each section describes a particular general phase of theory research, as identified in the General Method, and then presents the detailed theory research method(s) that will be used for each phase. *Guidance* is offered through the General Method's categorization of theory research into five universal theory building phases with clear outcome requirements to complete each phase. The *framework* is offered like the frame of a house: theorist scholars can identify which area(s) need more focus, with the ultimate aim of meeting the stated requirements for each phase.

Phase 1: Conceptual Development

The conceptual development theory research phase is the most extensive and important component of creating good theory (Whetten, 2002; Van de Ven, in press; Poole & Van de Ven, 1989). During this phase critical decisions are made that guide, direct, and inform each of the subsequent theory-building phases. According to Lynham (2002), the *outcome* of this phase is a conceptual or theoretical framework and the *process* (step-by-step actions) is determined by the theory research methods employed by the theorist. For this study, the theory research methods embedded in the General Method's conceptual development phase emerged from the literature review and, together, produce the outcome that is mandated by the General Method.

The conceptual development theory research phase requires "that the theorist formulate initial ideas in a way that depicts current, best, most informed understanding and explanation of the phenomenon, issue, or problem relevant in the real world context" (Lynham, 2002, p. 231). This phase of the theory research process describes most of the literature on theory building found for this study. To meet the demands of the General Method's conceptual development phase, this study identified and selected relevant theory research methods and perspectives to consider, understand, and do. These processes, described below, are embedded in the General Method's conceptual development phase.

Theory building processes or tasks embedded in the conceptual development phase of the General Method. This study found five distinct yet interrelated components that are embedded in the conceptual development phase of theory research in applied disciplines. The components are:

- Component #1: Identify, understand, and select alternative theory research perspectives and processes;
- Component #2: Resolve paradigmatic issues;
- Component #3: Resolve foundational theory issues;
- Component #4: Resolve preliminary research design issues; and
- Component #5: Identify and select the appropriate modeling process.

The study found that these five components reoccur in the theory research literature and are arguably generic to the conceptual development phase of theory building. This section is presented in three parts. A description of component #1 begins with identifying the alternative perspectives found in the theory research literature that will be

embedded in the conceptual development phase of the General Method. Components 2, 3, and 4 are then described—these three issues are paradigm, foundational theory, and preliminary research design issues. Component #5 is then presented. This third section describes the process of modeling that is required for completion of the conceptual development phase. Modeling entails the process of identifying the constructs and the relationships between the constructs. The final section presents the integrated conceptual development process used for this study.

Component #1: identify, understand, and select alternative theory research perspectives and processes. The General Method encourages theorists to incorporate multiple ways of understanding the phenomenon during the theory research process. It is believed that "using different theory-building approaches to study disparate issues is a better way of fostering more comprehensive portraits of complex organizational phenomena" (Gioia & Pitre, 1989, p. 587).

Van de Ven's (in press) Professional Science Diamond Model provides an alternative and complementary perspective to the General Method's conceptual development phase. This perspective provides deeper understanding of the demands of conceptual development than the General Method because it identifies many of the various decisions that need to be made by the theorist during this phase. This study found that by understanding alternative theory research perspectives, the theorist is able to juxtapose, integrate, synthesize, select, reject, justify, and convince readers of the strength of the ultimate theory research method selected for a study. As illustrated in the Diamond Model, the first baseline emerging from the reality base is *problem formulation*, and the base emerging from problem formulation baseline is *model.* These two processes

are nearly identical to the first two steps (concepts/units, relationships/laws of interaction) of the General Method's conceptual development theory research phase. *Problem formulation* "consists of developing a concrete description of the symptoms, conditions, or anomalies as they exist in the real world on a topic or issue. All the unorganized perceptions or facts pertaining to a topic or issue...belong here. Recognition of these perceptions or facts are acquired through experience, observation, or judgments of a problem, opportunity, or issue existing in a realistic situation...it often constitutes the starting point for the professional science process" (Van de Ven, 2003, p.10). The Diamond Model allows the theorist to state:

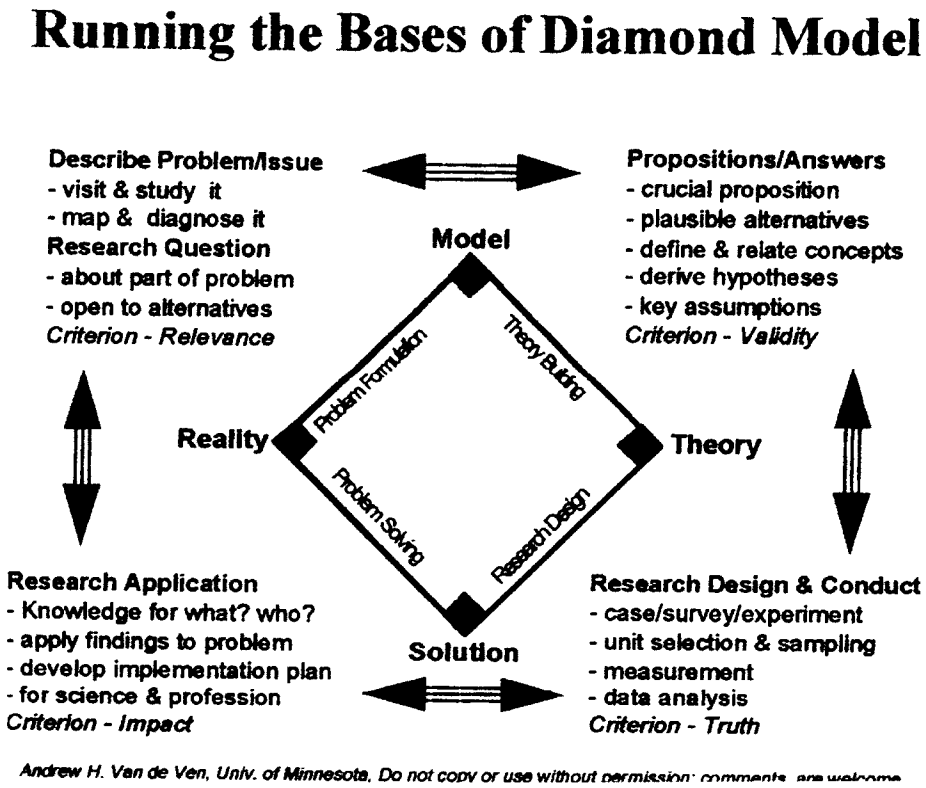
> "the research question and the body of knowledge that is relevant to the research problem. A conceptual model is the mental image or framework that an investigator brings to bear on the research problem. Conceptual models exist at various levels of abstraction from reality...(conceptual models) also structure our views of reality by specifying what problems and what aspects of problems are relevant and not relevant. Selecting the conceptual model is perhaps the most strategic choice that an investigator makes, for it significantly influences the research questions to ask, what concepts and constructs to look for, and the kind of propositions and hypotheses that will be set forth to answer these questions" (Van de Ven, 2003, p. 11-12).

As described above, the Diamond Model provides a list of decisions that need to be made during the General Method's conceptual development phase. Other scholarship on theory research also helps theorists to identify what types of decisions are made during

conceptual development. These include Christensen & Sundahl (2001), Whetten (1989, 2002), Weick (1989), and Pentland (1999). Each author offers alternative perspectives on how to complete the conceptual development phase of theory research.

Please refer to figure 3.2, Van de Ven's (in press) Running the Bases of Diamond Model. The theory research baseline and the theory base are two components that describe how Lynham's (2002) *operationalization* phase emerges out of the *conceptual development* phase. "The theory building baseline of the diamond model consists of developing clear statements of relationships or comparisons between two or more constructs that are expected to hold within a set of assumptions or boundary conditions" (Van de Ven, 2003, p. 11-12).

Figure 3.2



As identified by the Diamond Model, specific actions that need to be undertaken to complete Lynham's conceptual development phase include: stating the research question in analytical terms by relating or comparing key dimensions of the problem, describing at least two plausible answers to the question (e.g., Weick's (1989) thought trials), using different methods on the problem: "juxtapose opposites, levels, time, or introduce new concepts" (Van de Ven, 2003, p. 13), diagramming the problem, answering the questions of who, what, where, when, why, and how; reviewing literature; and assessing the potential contributions of variations in the problem statement.

As described above, this study will integrate these alternative theory research practices and perspectives into the conceptual development phase of the General Method. The contributions from other scholars provide this study with comprehensive understanding of the nature, scope, and processes of conceptual development not found within the General Method alone. These findings suggest that theorists using the General Method as a general theory research framework should explore, analyze, synthesize, and integrate alternative literature on conceptual development in order to best complete the conceptual development phase of the General Method.

Introduction to components 2, 3, & 4 of the conceptual development phase. From the literature review conducted on theory building, three generic conceptual issues emerged that seemed to 'belong' in the conceptual development phase of the General Method. These issues require understanding, analysis, resolution, and integration in order for the conceptual development phase to be completed.

This study found that most, if not all, of the complicated socio-technical processes important to HRD scholars and practitioners contain these three conceptual research

issues. These issues are universal to much of the research and t
theory research literature provides extensive guidance on how to g
issue. The issues are: 1) specifying paradigm(s); 2) identifying and j
foundational theories and perspectives; and 3) identifying and resolvin
research design issues. How the theorist deals with these three conceptua
shape how the theory is generated, how the theory is tested, and how the theory will be applied in the real world.

For example, focusing on the foundational perspective issue, this study could be presented in a variety of ways depending upon which foundational theory(s) are selected. If this study examined and then selected a foundational theory based on a structuralist perspective, the research question and subsequent theory research processes would revolve around how the organizational structure shapes the actions necessary for human capital transformation. Structural theories inform us about how structure shapes action. Alternatively, if the study examined and then selected a foundational theory based on an actor or agency perspective, the research question would be more focused on how individual action shapes the structure necessary for human capital transformation. Agency or action theories inform us about how individual action shapes structure. Either one of these two theoretical perspectives may be valid for the theory, but the theorist needs to explicitly select the one(s) that lay the foundation of the new theory being developed. That is to say, during the conceptual development phase the theorist must examine, analyze, select, and then integrate foundational theories.

As described above, structural and agency perspectives can be seen as contradictory, or at opposite ends of a spectrum. During the conceptual development

phase theorists are given wide latitude to examine oppositions of and tensions between foundational theories. Opposing foundational perspectives are seen as fruitful opportunities to shape theories. According to Poole and Van de Ven (1999) "most theorists view organizations as social action systems constructed by people who use them as arenas in which to achieve their goals and ambitions..." from this perspective, the objects under study "are the structural properties of a social system, the purposive actions of people, and the relationship of system and action," (p. 567). This perspective suggests that both structure and action theories are relevant to building theories to explain complicated socio-technical processes in organizational settings.

Component #2: resolve paradigmatic issues. Lynham (2002) argued that theorists need to explicitly state their paradigmatic assumptions in order to complete the conceptual development phase. One of the required tasks, then, is to understand, acknowledge the differences of, and select the appropriate paradigm(s) for building a theory when using the General Method. For this study, an extensive review of paradigms and their impact on theory research was conducted. The study found that many theory scholars encourage multi-paradigm theory building research and/or multiple thought-trials from different perspectives (including Weick, 1989, 1999; Poole & Van de Ven, 1989; Gioia & Pitre, 1990; Pentland, 1999; Bourgeois, 1979; Jick, 1979). Based on these findings, as well as the nature of the phenomenon under study, more than one paradigmatic lens will be used to develop the "most informed understanding of the phenomenon" (Lynham, 2002, p. 231) of human capital transformation through human resource development. Different paradigms often led researchers to pose different research questions because they are attempting to solve different types of problems. The

following chart illustrates how paradigmatic lenses can affect research questions and problem formulation. Both paradigms offer important elements for this research study.

As the following chart illustrates, and since the publication of Kuhn's (1970) seminal work, theorists have been made aware of how deeply connected theory building is with paradigmatic assumptions because "the nature of knowledge is inextricably tied to assumptions and vocabularies used to communicate ideas and approaches to study" (Gioia & Pitre, 1989, p. 587). In other words, decisions about framing and selecting research methods are guided by the often unstated and implicit assumptions of the theorist. As the awareness grew in the scholarly community of the impact of paradigms

Table 3.1: Example of Paradigm Differences Affecting Theory Building

	Interpretivist Paradigm	Functionalist Paradigm
Goals	To *Describe* and *Explain* in order to *Diagnose* and *Understand*	To *Search* for Regularities and *Test* In order to *Predict* And *Control*
Theoretical Concerns	*Social construction of reality; Reification; Process; Interpretations*	*Relationships, Causation, Generalization*
Theory-Building Approaches	*Discovery* through *Code Analysis*	*Refinement* through *Causal Analysis*

© Gioia & Pitre, 1990, p. 591.

on theory building, scholars like Burrell and Morgan (1979) began to examine and categorize how paradigms shaped theory and research.

Twenty years after Burrell and Morgan's work, Lewis & Grimes (1999) conducted a review of the multi-paradigm literature and identified three different approaches to incorporate multiple paradigms in theory research. These authors described the benefits of looking at the same phenomenon through different paradigmatic lenses. They suggested that the benefits of this using different lenses is 1) to provide

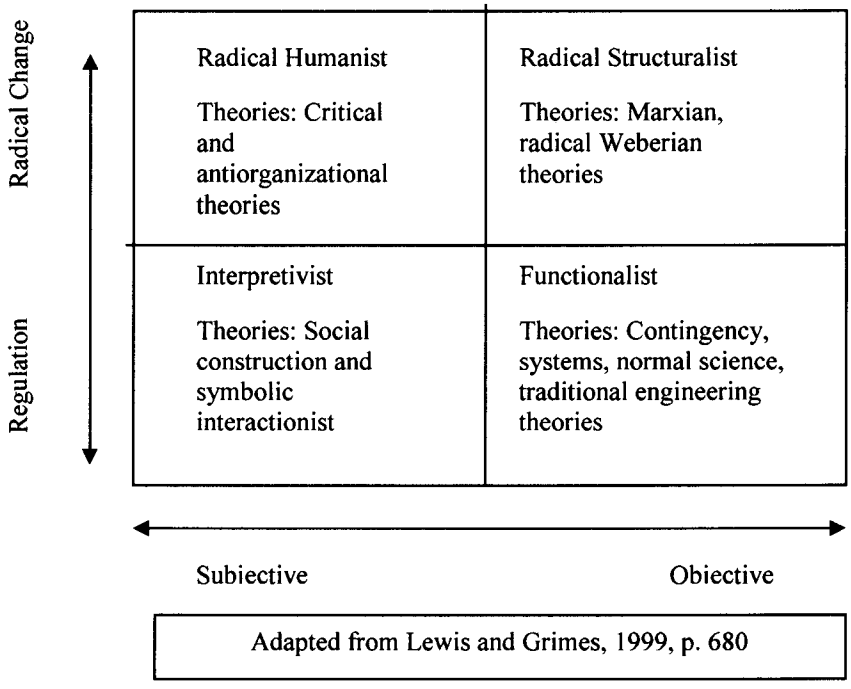
focus, yet enable interpretive flexibility; 2) gain multiparadigm understanding and cognizance of home paradigm; and 3) aim lenses at a common, empirical referent. The three approaches that theorists can take are: 1) multiparadigm reviews; 2) multiparadigm research; and 3) metaparadigm theory building. Before explicating how the multiparadigm research approach will be used for this study, it is relevant to discuss how the multiparadigm review approach provides a foundation for the actual multiparadigm research that will be generated. The scholarship using the multiparadigm review approach includes Gioia & Pitre (1989), Lewis & Grimes (1999), and Burrell and Morgan (1979), among others. The contributions of these analyses cannot be overstated: theorists choosing to examine complex organizational phenomena are provided with a comprehensive heuristic from these reviews. The heuristic then guides and shapes the theorist's understanding of the problem, the research question, and the possible research designs created to test the theory.

The multiparadigm review approach uses one of two techniques. The first technique is *bracketing*, used to "reveal the impact of theorists' underlying, and often taken-for-granted, assumptions on their understandings of organizational phenomena," (Lewis & Grimes, 1999, p. 673). Bracketing artificially narrows the perspective of the theorists in order to probe deeply into a phenomenon from that perspective. Benefits of this approach include being able to apply the language, methods, and traditions of a particular paradigm and being able to become more aware of the paradigm distinctions and perspectives. Burrell and Morgan (1979) as found in Lewis and Grimes (1999) also used bracketing methods to categorize existing theories along two axes: between subjective and objective, and between regulation and radical change. As described

above, these various categorizations can be used by theorists as heuristics for framing the research question, generating theory, and designing research agendas from multiple perspectives.

Another technique used in multi-paradigm reviews is *bridging*. Bridging allows the theorist to identify transition zones between paradigms. This perspective enables the theorist to understand paradigms not as either/or dichotomies, but rather as alternative perspectives arrayed along a continuum. "Discovering transition zones...illustrates the possibility and value of communicating across paradigms and may help theorists

Figure 3.3: Paradigms and Related Theories



comprehend "how the phenomena in question can legitimately be subject to various research strategies..." (Weaver & Gioia, (1997), p. 577 as found in Lewis & Grimes, (1999), p. 675). Both the *bracketing* and *bridging* tactics used in multiparadigm reviews

provide scholars with a way to classify and categorize the different paradigmatic assumptions.

From the review approach, theorists are then given the opportunity to develop alternative research designs from different paradigms. This is the second type of multi-paradigm scholarship as identified by Lewis & Grimes (1999), and it is called *multiparadigm research*. This approach will be used to develop and test *the theory of human capital transformation through human resource development*. "Multiparadigm research scholars move beyond review of existing literature to apply divergent paradigm lenses empirically" (p. 675). Theorists using this method of research to collect and analyze data are guided by the specific method and focus of more than one paradigm.

The decision to conduct multiparadigm research for this study was guided by the nature of the phenomenon itself (human capital transformation) and by the theorist's belief in and understanding of the value of conducting multiparadigm research. Human capital transformation could be examined from a variety of paradigms: functional/empirical, interpretive/constructionist; or critical science because the phenomenon itself combines many complicated social and technical processes. The technical processes lend themselves to be studied from the functional/empirical perspective; conversely, the social processes lend themselves to be studied from either the interpretive/constructivist or critical science perspective, depending on the goals of the researcher. Findings from all of these paradigms have the potential to add value to the discipline of HRD, and therefore this study sought to produce at least two different research designs, from two different paradigms, in order to test the theory of human capital transformation.

Component #3: resolve foundational theory issues. This study found that foundational theory issues need to be identified and resolved during the conceptual development phase for two related reasons. First, foundational theories serve the purpose of strengthening a new theory by specifying and confirming the assumptions of the new theory. Second, foundational theories can be used as a tool to explore contradictions, tensions, and oppositions between opposing 'answers' to the research question. That is to say, opposing foundational theories can serve to illuminate opportunities for new theoretical development. For this study, both aspects of foundational theories serve to strengthen the *theory of human capital transformation through human resource development.*

For example, as described in the introduction to this section, this study tapped into the long-standing debate in the sociology literature between agency (e.g., action) and structure. Framed in this manner, it is possible to see the tensions, oppositions, and contradictions in the theory building process from alternative perspectives. In other words, human capital transformation can be understood as an individual act: from this perspective, the action or agency assumption dominates the theory-building and research processes. This perspective assumes that individual actions are more important to understand than structure, and that actions create structure. On the other hand, human capital transformation can be perceived as resulting from the structural conditions of the organization. This perspective assumes that structural components are more important to understand than individual action, and that structure shapes action.

The debate is important to this research project because of the paradox it illuminates. The paradox is *both* individual action *and* structural conditions are central to

this study. Human capital transformation is a product of individual purposive action (Becker, 1993); human capital transformation is also structurally (Bontis, 2002) and socially (Coleman, 2000; Lin, 2001) determined. In order to constructively use the paradox, Poole & Van de Ven (1989) suggest "look for theoretical tensions or oppositions and use them to stimulate the development of more encompassing theories" (p. 563).

Four general strategies for dealing with paradox in organizations are offered by Poole & Van de Ven (1989). The strategies are: 1) accept the paradox and use it constructively; 2) "distinguish levels of reference in the contrary propositions and spell out the connections between them," (p. 571); 3) use time to relate structure and action; and 4) "develop a wholly new conception of the action vs. structure relationship. This novel conceptualization dissolves or supercedes the opposition," (p. 573-74). Each of these four strategies, conducted during Lynham's (2002) conceptual development phase, would produce alternative theoretical models, propositions, and hypotheses.

For this research project, the first strategy will be used with the expectation that future research studies will benefit from identifying how the paradox is actually manifested in this theory of human capital transformation. Subsequent studies can build upon the findings to identify connections, incorporate sequencing to understand mixed-level relationships, and eventually develop a whole new conception of human capital transformation.

Component #4: resolve research design issues. This study found that the conceptual development phase requires the theorist to make important preliminary research design decisions at the beginning of the theory building process. This may seem

backwards to some, but noted scholars (Van de Ven, in press; Zaheer, Alberts & Zaheer, 1999; Rousseau (1985); Poole and Van de Ven, 2000) argue that complicated organizational phenomenon requires careful specification of important research design issues on the front end of theory building. "In the long run, the best theory is only as good as its evidence" (Poole, et. al, 2000, p. 5) that is used to confirm, disconfirm, or adapt the theory being examined.

From this perspective, some research design decisions directly shape the construct and relationships between constructs. Since the output of the conceptual development phase includes constructs and their relationships, consideration must be given to those research design issues that have the potential to shape them. For this study, two research design issues were identified as having the potential to shape constructs and relationships. The issues are 1) levels of analysis issues; and 2) temporal issues.

Resolve research design issues subcomponent #1: levels issues: All theorists must "explicitly address the role of level on organizational phenomenon" in order to "avoid measurement and conceptual difficulties in studying mixed-level organizational processes" (Rousseau, 1985, p. 1). This section describes the levels issues surrounding human capital transformation. Scholarship on levels and theory building is provided by management scholars including Rousseau (1985), Chan (1996), Mossholder and Bedeian (1983), Lazarsfeld and Menzel (1969), Klein and Kozlowski (2002), and Schanke and Dumler (2003). These scholars illuminate the deep connections between levels, theory-building, and scientific research on complex organizational phenomenon. Scientific research is intricately connected to theory building processes in the operationalization, confirmation/disconfirmation, and application phases of applied theory building research.

However, it is in this first phase—conceptual development—that critical levels decisions are made that subsequently shape and guide the rest of the theory-building journey.

There are three definitions that are important for this research project: 1) *level of measurement* refers to the unit to which the data are directly attached (Rousseau, 1985; Schanke & Dumler, 2003); and 2) *level of analysis* refers to the unit to which the data are assigned for hypothetical testing and statistical analysis (Rousseau, 1985; Schanke & Dumler, 2003). A *focal unit* is the level of reference (e.g., the organization, the individual, the team, etc.). A focal unit is the level to which generalizations are made. In the study of human capital transformation, the focal unit could be the individual, the team, or the organization. During this conceptual development theory-building phase, decisions about what is the focal level, measurement, and analytical levels will be made.

We know from the preceding chapters that human capital transformation is a multi-level phenomenon that would be very difficult to conceptualize without explicit descriptions of the levels of inquiry. For example, human capital transformation unleashes human expertise into the work environment with the resulting positive impact (however measured) accruing to the organization. But that is not the whole story. The individual also may receive benefits such as satisfaction, promotion, raises; and group members may benefit from learning from and modeling after the individual. Clients may also benefit by receiving innovative service, on-time delivery, or decreased billings. Human capital transformation, therefore, seems to impact multiple organizational levels: individual, group, process, and organization.

As described above, human capital transformation can be viewed either a multi-level or mixed-level research problem. During this conceptual development phase of

theory building, two levels issues must be resolved and the appropriate research design decisions (e.g., multi-level or mixed-level) must be made. The two issues are: 1) the analytic model must be properly specified, and 2) the construct validity of the operationalizations at the level the model specified (in #1) must be anticipated and specified (Rousseau, 1985). To resolve the first issue, as a component of the General Method's conceptual development phase, this study needed to determine the appropriate levels of analysis and select the most appropriate level model. To accomplish the second issue, as a component of the General Method's second 'operationalization' phase, the study needed to anticipate how to ensure the construct validity of the units of the specified model. For example, "different variables may enter a model at different levels and may mean different things from one level to the next" (Bernstein, 1980 in Rousseau, 1985, p.11).

As described above, levels issues will thus be important to the first two phases of theory research in the General Method of Theory-Building Research (Lynham, 2002)

1. Conceptual development phase: based on paradigmatic assumptions, the theoretical model will be properly specified in terms of levels; and
2. Operationalization: based on the levels specifications, the resulting operationalization that is generated for empirical confirmation will be appropriately designed to avoid spurious conclusions or errors of inference.

Resolve research design issues subcomponent #2: temporal issues. The importance of time in theory building is becoming acknowledged in recent literature. For example, British Petroleum found that engaged problem solving at work had a greater impact early on in a project than later (Cross, Parker, Prusak & Borgatti, 2001). In other

words, the *timing* of the activity matters in terms of performance. From this perspective, if one were to create a theory on how to improve project performance, one would need to take into consideration the temporal aspects of performance enhancers.

According to George and Jones (2000), "time can and should play a more important role (in theory building) because it can change the ontological description and meaning of a theoretical construct and of the relationships between constructs...we suggest that theorists explicitly incorporate multiple aspects of temporality onto the 'what, how, and why' building blocks of their theories" (p. 657). Likewise, Zaheer, Albert, and Zaheer (1999) assert "specification of the relevant time scale is as critical as the specification of the appropriate level or unit of analysis, a concept to which it is related," (p. 725). This section details how time considerations (as described by George & Jones, 2000; Zaheer, et al, 1999) impact the development of a theory of human capital transformation.

The concept of 'time scales' relevant to building theory is the major contribution of Zaheer, et al (1999). Time scales refer to the length of a temporal interval, and can be either subjectively or objectively determined. Time scales are used to build and test "theories on process, pattern, phenomenon, or event" (p. 725) and can "define the phenomena being studied and shape the researcher's engagement with, and understanding of, those phenomena," (p. 725). Time scales are categorized into three domains:

1. the *existence interval* is directly tied to the phenomena under study;
2. the *observation, recording, and aggregation intervals* are an outcome of how the researcher frames the concepts and research design of the phenomena; and

3. the *validity interval* is the length of time which the theory is said to be valid (much like a system state per Dubin, 1978).

According to Zaheer, et al (1999), time scales are usually unspecified boundary conditions in organizational theories. However, following Whetten (1989), the authors argue that time scale decisions made during the theory-building process "may change the meaning of concepts or the relationships between them," (p. 734). For example, when the theorist chooses a particular time scale in order to observe patterns of a phenomenon over time, the patterns that emerge are directly dependent on the types of time scales used to generate them. The author's assert "it is important to note that the different theoretical relationships that may emerge at different time scales are not simply poor versions of the one 'true' relationship but, instead, are relationships that are valid in their own right and that have both different origins—reasons why they come about—and implications" (p. 735.)

A theory is 'time scale complete' when all variables, relationships, and boundary conditions have specified time scales. "Such a theory would specify the intervals over which the phenomena exist; over which the theory is expected to hold; and over which the phenomena are observed, recorded, and aggregated," (p. 738). For the theory of human capital transformation, the time scales will be explicitly specified for the existence, validity, observation, recording, and aggregation intervals when appropriate.

George and Jones (2000) offer different conceptual tools and strategies for incorporating time into theory building. These concepts complement the Zaheer, et al (1999) time scales by providing detailed questions about the what, how, and why aspects of time, which can then be incorporated into the conceptual development phase of the

General Method. Their research describes six different time dimensions and the impact of those dimensions on the 'what, how, and why' of theory building (see table 3.2).

Table 3.2 Time Dimensions and Theory Building

Time Dimensions	*'What' of Theory*	*'How' of Theory*	*'Why' of Theory*
Past, future, and present subjective experience of time Time aggregations	How are the past, future, and present represented or incorporated in a construct? How, in time, is the construct meaningfully aggregated?	How do the past, future, and present affect the relationships between constructs? In theorizing relationships between constructs, what is the level of time aggregation?	Why do the past and future impinge on relationships in the present in the manner theorized? What is the rationale for the level of time aggregation for relationships theorized between constructs?
Duration of steady states and rates of change	What is the duration of the construct, what is the rate of change, and why?	What are the duration of the relationships between constructs? What is the time lag between the presence of causes and the demonstration of effects? What are the effects of differences in rates of change of causes and effects?	Why does the relationship between a theorized cause and a theorized effect remain in a stable state or why does it change at a specified rate?
Incremental versus discontinuous change	Does the construct change in an incremental or discontinuous manner?	Does an antecedent have an incremental effect on a consequence or does it result in a major, discontinuous change?	Doe causal relationships between constructs unfold over time in an incremental or discontinuous fashion and why?
Frequency, rhythm, and cycles	Does the construct change in a rhythmic or cyclical fashion over time?	Do relationships between constructs occur in a rhythmic or cyclical fashion?	Why are some causal relations regular, rhythmic, or cyclical over time?
Spirals and intensity	Does the construct spiral over time?	Do relationships between constructs spiral over time?	Why do some relationships between constructs spiral over time?

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For this study, the time dimension of past, present, and future will be addressed during the conceptual development phase. This first dimension, as detailed in the above chart, provides a basic foundation for conceptual development. In the future, it is hoped

that research and theory building on human capital transformation will incorporate the other dimensions of time as described by George and Jones (2000).

Component #5: modeling issues. The output of the conceptual development phase of theory building will be a type of model that explains and/or illustrates the connections between the concepts of the theory. As such, this study found that the process of modeling is a generic process of building applied theory. In addition to helping the theorist create a visual representation of a theory, the process of modeling can also inform and shape the intellectual processes of conceptual development within the mind of the theorist. For example, Whetten (2002) argued that graphical models can be purposively used as cognitive mapping tools during theory development. From this perspective, "one of the espoused benefits of a structured, systematic approach to theory articulation is that the theories represented in this manner can be readily subjected to logical, empirical and practical tests," (Bacharach, 1989 as found in Whetten, 2002, p. 62). Theorists choosing to use modeling in this way are given more opportunity to assess and reassess the outputs of conceptual development while it is happening.

This study selected Whetten's (2002) modeling as theorizing process to use during the conceptual development theory building phase. This model was selected for two reasons: 1) a clearly articulated process of modeling; and 2) a deep analysis of how the actual intellectual process of modeling is beneficial to theory building. The four steps of the modeling process are: 1) identify relevant constructs and assess the complementarity or compatibility of elements of the set of constructs; 2) describe the relationships between the constructs, that is, relationships of influence (Cossett & Lapoint, 1997 in Whetten, 2002), or laws of interaction (Dubin, 1978), or causal links

(Sterman, 2002 in Whetten, 2002); 3) identify the conceptual assumptions of the theory; and 4) identify the contextual assumptions of the theory. The purpose of steps 3 and 4 is to "make explicit the theoretically relevant relationships in your conceptualization" of the phenomenon under study...(and) specify the context, or boundary conditions, of our theory" (p. 13).

The first step of modeling involves three activities. The first activity uses 'Post-it® Notes' (PIN), and theorists writes down each single construct as a noun or noun phrase. During this activity, Whetten (2002) suggests thinking of the construct as variables, not values (high or low) in order to "account for the full range of a construct" (p. 52). This phase of conceptual modeling provides the answers to the "what" questions of the theory.

In the second activity, the theorist evaluates the constructs as a set in two domains: scope and coherence. The scope "generally refers to the breadth of the behavior or activity covered, the class of things to which it applies, or the totality of the objects that it identifies," (Osigweh, 1989, p. 584 in Whetten, 2002, p. 52). The scope should be appropriate for the intended use of the theory, either as a general explanation or as a basis for contextualized research. Since Lynham's (2002) General Method requires confirmation or disconfirmation, the scope of the theory must enable realistic research designs rather than broad, mid-level theoretical abstractions.

Coherence involves to the degree to which the theory 'hangs together.' The standard of coherence "requires (the theorist) to grant the criterion of *systematic* trumping rights over the criterion of *complete*...A common source of hard-to-follow, difficult-to-understand explanations is unnecessary complexity, resulting from the inclusion of bits

and pieces of knowledge that are legitimately related to the subject but that are not germane to the author's particular interest in the subject (or exceed the author's capacity to do justice to the subject," (Whetten, 2002, p. 53). During this activity, the theorist must make explicit any cross-level process that accounts for the end results, namely either *emergence* (individual attributes and properties shape collective properties or attributes) or *embeddedness* (lower level attributes are shaped by collective or global properties or attributes). Because of the complexities of theorizing across multiple levels, Whetten concurs with Kozlowski and Klein (2000) that novice scholars should "act as if the phenomena occur at only one level of theory and analysis. In this way, a theorist temporarily restricts his or her focus, putting off consideration of multilevel processes for a period" (Kozlowski & Klein, 2000, p. 13 in Whetten, 2002, p. 54).

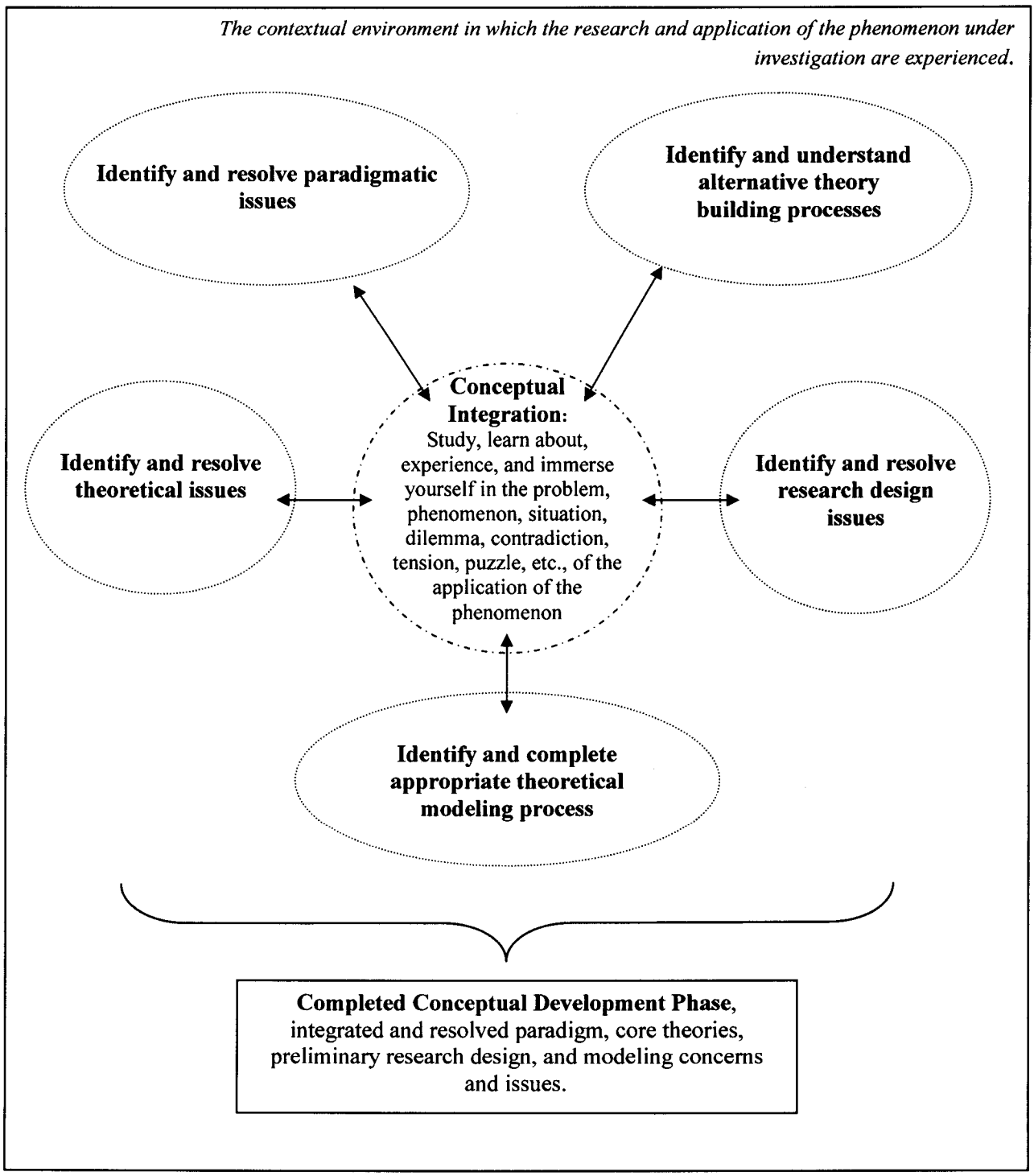
Because it has been demonstrated that the phenomenon of human capital transformation is multi-level, it is difficult to narrow the scope of the theory to one level without seriously undermining its efficacy. On the other hand, renowned scholars including Whetten (2002), Weick (1989), Klein and Kozlowski (2002) and Poole and Van de Ven (1989) suggest that mixed level theories are extremely complicated and full of potential misspecifications. For this study, then, a compromise was offered: one theoretical model was generated for the individual level and two research designs (from different paradigms) were created to test the theory. In the future, models of human capital transformation at group/department and organizational levels will be created and tested. Eventually, a mixed-level model of human capital transformation will be generated that is based on the single level models and research findings from alternative paradigms.

The Integrated Conceptual Development Method for Theory Building Research in Applied Disciplines

This section presents the integrated conceptual development method that will be used for this study. As illustrated in figure 3.4 (below), and as described earlier, there are five distinct yet interrelated components of the conceptual development phase of the General Method. Each of these five components must be integrated by the theorist during this phase. At any one point in time, each component may interact with or influence the others. The theorist, depicted as the 'conceptual integration' circle in the middle, undergoes an intense mental gymnastic in order to simultaneously think about, assess, evaluate, select, and integrate the five components during the conceptual development phase.

In addition to the actual theory building process, the theorist must also immerse him or herself in the study of the phenomenon itself. There can be simultaneous, sequential, iterative, and/or sporadic interplay between learning more about the phenomenon, identifying alternative paradigms, assessing core theories, resolving research design issues, and selecting and completing a modeling process. This phase represents a challenging mental exercise in focus, analysis, and integration.

Figure 3.4: The Conceptual Development Phase of Theory Building Research in Applied Disciplines



Once the conceptual development phase is completed, the remainder of the General Method is relatively straightforward. The final four phases of building applied theory are described below.

Phase 2: Operationalization

The operationalization phase of Lynham's (2002) General Method is "essentially an explicit connection between the conceptualization phase and practice" (p. 232). In order to bring the conceptual framework created in the first phase into the real world of events, the theoretical framework "must be translated, or converted, to observable, confirmable components/elements...in the form of, for example, confirmable propositions, hypotheses, empirical indicators, and/or so called knowledge claims" (Cohen, 1991, in Lynham, 2002, p. 232). The *outcome* of a completed operationalization phase is an operationalized theoretical framework; the *process*, as in the first phase, is dependent on the phenomenon and left up to the theorist to identify.

The theory base represents, according to Van de Ven (2003), "propositions at a middle range of abstraction" (p. 14). Like Dubin (1978), Van de Ven argued that propositions should be crucial in order to "promote a critical research attitude and leverage knowledge" (p.14). The theory base is reached by completing several steps as identified in Van de Ven's (in press) Professional Science Diamond Model. The steps used in this study include developing crucial propositions, describing plausible alternatives, defining and relating concepts, deriving hypotheses, and identifying key assumptions (both conceptual and contextual).

Phase 3: Confirmation or Discomfirmation

According to Lynham (2002), this third phase of theory building "involves the planning, design, implementation, and evaluation of an appropriate research agenda and studies to purposefully inform and intentionally confirm or disconfirm the theoretical framework central to the theory" (p. 233). The *outcome* of this phase is a confirmed and trustworthy theory; the *process* to complete this phase is left up to the theorist to decide.

Please refer again to the Diamond model, figure 3-2. The research design baseline is identical to Lynham's phase three. To complete this phase, several steps, as identified in Van de Ven's Professional Science Diamond Model, will be undertaken for this research study. Two research design(s) will be created that permit multiparadigm research. The two proposed research designs are case study designs employing multiparadigm research methods.

Phase 4: Application

The fourth phase of Lynham's (2002) General Method requires that the theory undergo further "study, inquiry, and understanding of the theory in action" (p. 233) in the real world. The application phase is nearly identical to the problem-solving baseline of Van de Ven's (in press) Professional Science Diamond Model. The *outcome* of this phase is further developing and refining of the theory; the *process* of this phase is, like the others, left to the theorist to decide.

The actions required to complete this step are 1) to apply the findings of the first three phases to a real world problem; 2) to identify what knowledge is generated; 3) to identify stakeholders that may use the knowledge; and 4) to assess the findings in terms

of value to science and the profession of HRD. These steps will be taken as a part of an ongoing research agenda focused on human capital transformation in 2005.

Phase 5: Ongoing Refinement and Development

According to Lynham (2002), a theory is never complete. Theories are recursive—an ongoing process of continual 'renewal' that is required to keep the theory current with real world events. The outcome of this phase is a theory that "is kept current and relevant, and that it continues to work and have utility in the practical world. It also ensures that when the theory is no longer useful, or is found to be 'false,' that it is shown to be as such and adapted or discarded accordingly" (p. 234).

This phase is never completed. Further research and application of the theory of human capital transformation can continue indefinitely. For example, the theory can be applied to non-United States organizations to assess its transferability to other cultures. The theory could be tested in different organizational contexts, or tested through different paradigmatic lenses to illuminate different components of human capital transformation. Over time, the research findings will uncover anomalies that will fuel different questions and problems. These questions and problems will then possibly generate new insights, concepts, and hypotheses. The long-term process of theory building is thus an iterative process of continual adaptation.

The theory and research designs developed in this study are only the first step of the author's long-term research agenda using the General Method to understand human capital transformation through human resource development. The General Method is best understood as a long-term, iterative, and phased research agenda that can encompass a lifetime of research and testing. Within the General Method, there are many rational

exit points for concluding a study. For example, a study could complete the conceptual development phase and present the findings and conclude the study. For this study, the exit point is half-way through the third phase of the General Method, namely the confirmation/disconfirmation phase.

Connections Between the Research Problem and the Selected Research Method

The intention of this research project is to develop a *theory of human capital transformation through human resource development* that can incorporate different paradigmatic perspectives and methods. It was found that two theory research methods (Lynham, 2002; Van de Ven, in press) offered a complete process that could incorporate (to a greater or lesser degree) multiple paradigms. Because Van de Ven's (in press) Professional Science Diamond Model ultimately advocated for an empirically based logic to confirm or disconfirm the theory, Lynham's (2002) General Method was selected as the best theory research method for this study.

Lynham's (2002) General Method offers a generic, universal theory building research method for researchers to follow. However, it leaves most of the detailed decisions about specific steps required to complete each phase for the theorist to make. The theorist is led by clear expectations of the *outcome* of each phase, so it is clear and unambiguous to the theorist what *must happen* during each phase. The theorist is thus encouraged to identify relevant scholarship, based on the phenomenon under study, that contributes to the completion of each phase of the General Method.

In order to complete the conceptual development phase, this study identified five distinct but related components embedded in this first phase. The five components require the theorist to conceptually integrate paradigms, alternative theory building,

research design, core theory(s), and modeling issues. Each component may influence the others, and all must be successfully and convincingly integrated in order to produce a valid, logical, well-grounded, and explicit theory. The subsequent four phases of the General Method are relatively straightforward and build upon the findings of the first phase.

CHAPTER FOUR:

CONCEPTUAL DEVELOPMENT OF A THEORY OF HUMAN CAPITAL TRANSFORMATION THROUGH HUMAN RESOURCE DEVELOPMENT

This chapter details the conceptual development of *a theory of human capital transformation through human resource development.* As highlighted in Chapter 3, the conceptualization phase of the General Method (Lynham, 2002) framework is expanded to integrate the following five conceptualization components: 1) identify and resolve paradigm issues; 2) identify and understand alternative theory building processes; 3) identify and resolve theoretical issues; 4) identify and resolve research design issues; and 5) identify and complete an appropriate theoretical modeling process.

Findings of the Conceptual Development Phase of Human Capital Transformation Through Human Resource Development

The findings of this phase include both *process* and *outcome* data. Traditionally, findings are considered the *outcome* of a research process. For this study, *the process itself* is also considered a finding of the study. This study found that the complex, interdependent cognitive and integrative processes involved in creating concepts are as important as the actual concepts themselves. In other words, presentation of outcome data (e.g., the concepts themselves) for this chapter provides only a portion of the overall findings of this study.

The *process* of conceptual development, as defined in chapter 3 and as undertaking for this study, is presented first. The first section describes the actual cognitive and integrative processes used to complete the conceptual development of *a theory of human capital transformation through human resource development.* This study found that during this study, the five conceptualization components embedded in the conceptual development phase of the General Method influenced each other at different points in time. This first section contains narrative timeline of activities and research foci to illustrate how each of the five conceptualization components interacted with each other over time.

The second section recaps the major decisions and findings of the conceptual development phase and the five components. Finally, this chapter concludes with a list of propositions for the proposed *theory of human capital transformation through human resource development* from which the next phase of theory building (operationalization) was undertaken.

Overview of the Conceptual Development Phase for This Study

This section presents a narrative overview of the conceptual development phase of the General Method as followed for this study. The narrative illustrates the ebbs and flows of influence between each of the five components of conceptual development over time. To review, the definition of human capital transformation used in this study is: *Knowledge, Skills, and Attitudes that are activated to achieve desired outcomes by people embedded in social networks and organizational contexts.*

This study began in December, 2002. At that time, an extensive and comprehensive literature review was conducted in order to develop a deep understanding of what ended up being called *human capital transformation*. In addition, practitioner's perspectives were unscientifically gathered during these first few months in order to critically assess and potentially shape the emerging research questions. From December, 2002 until May, 2003, the phenomenon of *human capital transformation* was the primary focus of the study.

Beginning in May, 2003, the conceptual development phase emerged as the primary focus of the research efforts. At this time, inquiry efforts turned towards understanding theory research in general and conceptual development specifically. The literature presented a variety of theory building processes appropriate to the conceptual development phase of theory research (see chapter 3). Over time, the analysis, synthesis, and categorization of the literature suggested that there were five components of conceptual development. Scholars wrote about and described these components differently, but their contributions towards a completed conceptual development phase were clearly identical. These five components were described in chapter 3.

At the same time as the five components were emerging, the findings of the theory literature began to reshape the understanding of the phenomenon under study, namely human capital transformation. For example, viewing human capital transformation as both a structural and action process (e.g., identifying and resolving core foundational issues) allowed the previous research findings on human capital transformation to be reassessed in a different light. The outcome of these reassessments

entailed a clearer understanding of the phenomenon, more focused research questions, and stronger research designs.

As the five components began to dominate the conceptual development phase, the process of integrating the five conceptual components into one clear process of conceptual development involved extensive writing and rewriting of the research findings for the conceptualization phase. Through the process, a clearer understanding emerged as to how the five components impacted the decisions of the theorist as well as the relationships between the theorist, the phenomenon under study, and the theory conceptualization phase. This study found that the theorist is responsible to conceptually integrate the findings of the literature *about the phenomenon* and *about theory building*. Further, this study found that the conceptual development phase required an *integrated, logically consistent, comprehensive*, and *explicit* process. Conceptual development requires the *integration* of complex theoretical and practical issues; it requires that the theorist be *logically consistent* about selection criteria, decisions, and processes; it requires the theorist to conduct a *comprehensive review* of theory building literature; and it requires that the theorist *explicitly declare* the assumptions, decisions, and selection criteria for each step of conceptual development.

Conceptualization Component 1: Identify and Resolve Theory Research Issues for Human Capital Transformation Through Human Resource Development

To begin the conceptual development phase, this study borrowed techniques, perspectives, and processes from a number of alternative theory building scholars, including Whetten (2002), Van de Ven (in press), Poole and Van de Ven (1998), Zaheer, et al (1989). These alternative perspectives all provided detailed guidelines and

outcomes that were required to complete the General Method's conceptual development phase of theory research. Further, these perspectives provided clear criteria for assessing the quality of conceptual development not found in the General Method. For this study, these perspectives were described in chapter three and shaped the processes involved with building a theory of human capital transformation.

The outcome of this component of conceptual development was an integrated theory building process derived from the theory research undertaken for this study. The identification and resolution of the theory research issues conducted for this study was unique and explicitly focused on the phenomenon of human capital transformation through human resource development.

The criterion for evaluating this component, according to Lynham (2002) and Van de Ven (in press), are 1) the theory building method, as derived from the theory research, should be dictated by the nature of the theory being created and not based on the researcher's preferred paradigm; and 2) the theory building method, as derived from the theory research, should contribute towards new knowledge of the phenomenon under study.

The answers to both questions are affirmative. For the first question, the theory research led to a deep understanding of the impact of paradigm selection on theory building. A multiparadigm perspective was selected based on the complex phenomenon under study, namely, human capital transformation through human resource development. The phenomenon guided the choice, not the researcher. For the second question, multiparadigm research provides the greatest opportunity to understand this

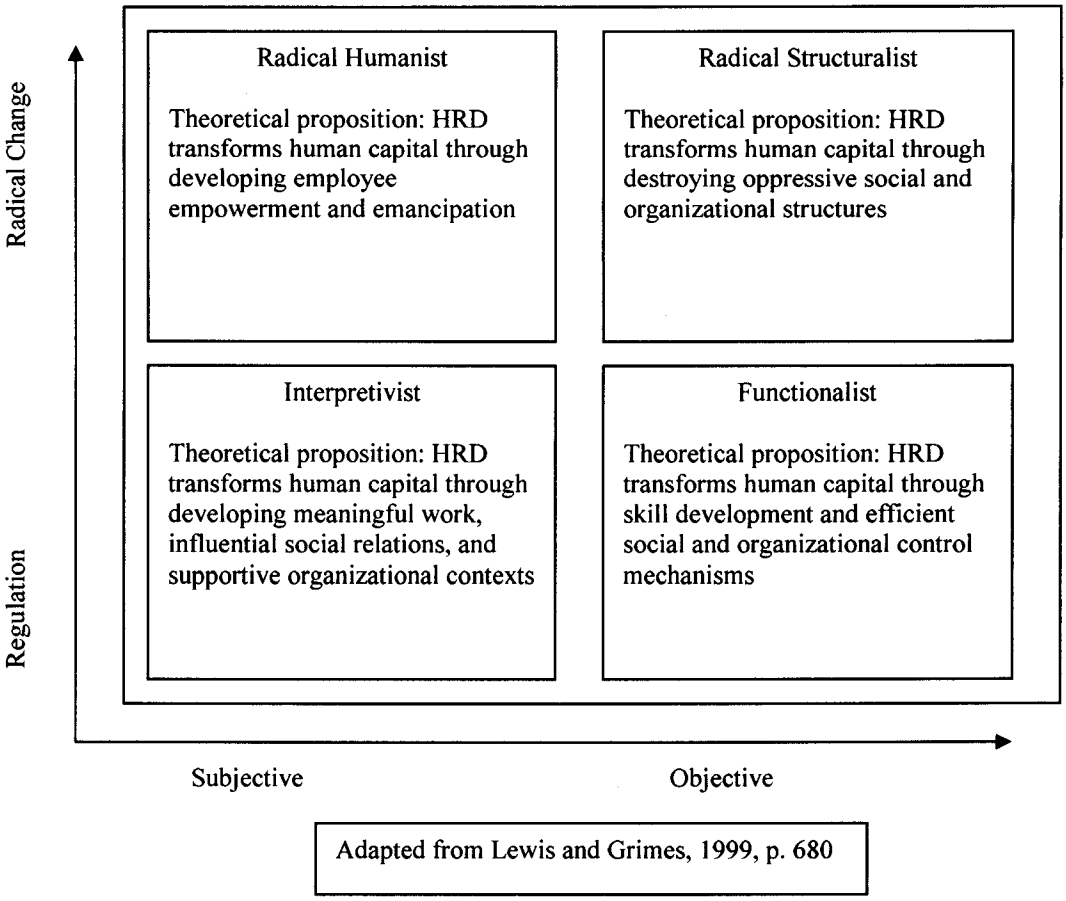
complex phenomenon and provides future research opportunities that can contribute towards the discipline and profession of human resource development.

Conceptual Component 2: Identify and Resolve Paradigm Issues for Human Capital Transformation Through Human Resource Development

As the five components of conceptual development started to distinguish themselves, the study placed the highest priority on understanding the impact that various modes of inquiry have on views of human capital transformation. The decision to focus first on paradigms was based on Lynham's (2002) assertion that different paradigms (e.g., modes of inquiry) would directly influence the entire theory-building process. Because of this understanding, the study focused first on understanding exactly *how* paradigm decisions could shape the theory of human capital transformation. The outcome of this component is the selection and justification of the selected paradigm(s) of the study.

To identify the impact of paradigm selection on the study of human capital transformation through human resource development, propositions were created from each of four paradigms identified in the literature. The following list of idealized propositions is not exhaustive, rather it is meant to illustrate the profound impact of alternative paradigms on understanding how human capital is transformed through HRD. To organize this section, the study uses the Lewis and Grimes (1999) model.

Figure 4.1 Propositions from Different Inquiry Paradigms



Adapted from Lewis and Grimes, 1999, p. 680

Each of the four inquiry propositions represents one worldview, or paradigm, that describes an alternative reality of how human capital could be transformed through HRD. The output of this process of critical reflection was the selection of two of the four paradigms for eventual multi-paradigm research. The criteria for evaluating paradigm selection are 1) does the paradigm(s) support the purpose and goals of the research? and 2) will the selected paradigm(s) contribute towards the discipline of HRD?

The answers to each question are affirmative. For the first question, the purpose and goals of this study are to explore the multiple facets of human capital transformation

through human resource development. Single paradigm studies will only provide a partial, incomplete view of the phenomenon. For the second question, the multiparadigm research will contribute towards HRD in two ways: first, multiparadigm studies in HRD are less common than single paradigm studies. Because of this, new multiparadigm research designs will contribute towards enhancing the research agenda of the field. The second way that this multiparadigm study will contribute to the field of HRD is by presenting a multifaceted examination of a complex organizational phenomenon. The longer-termed study beyond this effort will eventually use functionalist and interpretivist, paradigmatic assumptions and methods to understand how human capital is transformed through HRD. For the near-term study, as described in chapters five and six, functionalist/empirical and interpretivist/constructivist research methods will be used to test the theory. Eventually, it is hoped that each of the four paradigms will be used to assess, analyze, study, and theorize about human capital transformation through HRD. This is seen as a long-term research project that will require the development of deep collaborations between the researcher and organizational partners.

Detailed discussion of the paradigms appropriate for the study of human, social, and structural capital. Each of the three types of capital presents research opportunities that could be analyzed through alternative paradigms. However, based on how this study is framed, certain paradigmatic perspectives seem more appropriate for different aspects of the theory of human capital transformation through HRD. In addition, HRD itself has been understood and examined from a range of paradigms or worldviews, which further add to the multi-paradigm focus of this research project.

Human capital, as manifested at the individual level, has been identified as individual purposive action to satisfy goals and ambitions (Van de Ven & Poole, 2002). Employees have a range of knowledge, skills, and attitudes (KSAs) that are latent until activated. That means that the human asset to an organization is the action taken by the employee in order to accomplish some goal. In order to understand how employees decide to take action, an interpretive mode of inquiry is warranted. Interpretive inquiry is most appropriate for this component because 1) the constructed meanings of stakeholders (e.g., employees with goals and ambitions) are considered the foundation of action; and 2) the research study seeks to understand, make sense of, and interpret the impact of individual goals and ambitions on human capital transformation. This study did not attempt to find generalizable laws because of the contextual influences of organizational life. In other words, human activity in organizations is seen as resulting from a complex mix of meaning making and external factors (Weick, 1989, 2001). The intention of this study was to understand and interpret how goals and ambitions can impact human capital transformation.

On the other hand, human capital, as manifested at the group/department and organization levels, could be studied *either* through the interpretive view or the empirical-analytical view. While this study is focusing exclusively on the individual level, future studies can incorporate both views. Both views of building theory for these levels of analysis are appropriate for this study because 1) group and collective actions can be identified and studied through observational data (empirical/analytical); 2) the data can potentially illuminate patterns, from which generalizable laws could be generated (empirical/analytical); 3) group dynamics may be studied through identifying

common meanings and interpretations (interpretive); and 4) the purpose of this study is to make sense of and understand how human capital is transformed through HRD (interpretive).

Paradigms appropriate for the study of structural and social capital. For this study, structural and social capital can be studied and understood from the empirical/analytical perspective: empirical data can identify the components of structural capital, and social network analysis can identify the components of social capital. On the other hand, how the individual, group, or organization makes sense out of the structure and relationships is best understood from the interpretive perspective. Therefore, depending on the purpose of the inquiry, either view of theory building inquiry could be appropriate for this study.

Conceptualization Component 3: Resolve Core Theoretical Issues for Human Capital Transformation Through Human Resource Development

While placing primary focus on the impact of paradigm selection, core theoretical issues were always in the background, somewhat influencing and being influenced by the findings of the paradigm research. The output of this component is the explicit determination of the foundational theories that undergird the theory of the study. The criteria for evaluating this component include 1) are the foundational theories supported in the literature?; and 2) do the foundational theories logically support the theory under development? For each of these questions, the answers are affirmative. To answer the first question, the literature review in chapter two provides the supporting scholarly literature for the foundational theories. To answer the second question, this study built a

logical case for including the selected foundational theories through evidence and argumentation.

Based on the literature review in chapter two, this study assumed that people and organizations make decisions based on what they value. This foundational theory is based on a utilitarian perspective. In addition, the literature review found that decisions (of people) could also be made based on social identity theory. These two foundational theories are aligned with functional/empirical (utilitarian) and interpretive (social identity) paradigms. Logically, then, this study relies on the assumptions and limitations of both utilitarian and social identity theory.

Social capital theory also provides a theoretical foundation for this study. Lin's (2000) theory of social structure and action provides an explicit set of assumptions and limitations for how social capital operates in the theory of human capital transformation through HRD. This theory of social capital was selected over alternative theories because 1) it offers explicit yet generic ideas that can be adapted to a variety of organizational settings; and 2) it is generated from the discipline of sociology, and thus represents one answer to the agency/structure debate that is used in this study (see following discussion of agency/structure). Theories of social capital that have been generated from the discipline of management were not selected for this study because of the emphasis on the organization as the level of analysis—this study is focused on the individual as the level of analysis.

The assumptions of social capital based on Lin's (2000) theory are:

1. Valued resources (social, economic, or informational) are embedded in social structures

2. These valued resources are called the social capital of people in the social structure
3. Interactions occur primarily between like individuals
4. The success of actions are positively associated with social capital

In addition to these two foundational theories, the structure/agency theoretical debate is used in this study to illuminate potential conceptual and research opportunities. That is to say, this study uses elements of both structural and action theory to dissect the various layers of human capital transformation. What is important here is that these foundational perspectives are used as tools to restate the research question in analytical terms; from that restatement, new conceptual and research opportunities are illuminated.

For example, this study agrees with most theorists that organizations are "social action systems constructed by people who use them as arenas in which to achieve their goals and ambitions," (Poole & Van de Ven, 1999, p. 567). From this view, the three central objects of study are 1) the structural properties of a social system; 2) the purposive actions of people; and 3) the relationship between the system and individual action. To restate the research problem in analytical terms, then, the three central objects of this study are 1) structural and social capital (as structural components); 2) employee performance at work (as the action component); and 3) the relationship between the structural components and individual performance at work.

Conceptualization Component 4: Resolve Research Design Issues for Human Capital Transformation Through Human Resource Development

As the conceptualization research continued, two issues emerged from the research design literature that required consideration during the conceptual development

phase of theory research. These two issues are levels and temporal issues. While scholars argue that research design should always play a role in theory research (Poole and Van de Ven, 2000), how these two issues are resolved substantively shape the outcome of conceptual development and thus should be included in the conceptual development phase.

Unlike the other components, the outcome of this component is not a finished product. Rather, this component will guide the subsequent phases of applied theory building by sensitizing the theorist to these important research design issues. Therefore, the output of this component is cognitive understanding of the role that certain elements can play in formulating a research design. The criteria for evaluating this component is: are the elements identified and selected for this component driven by the nature of the phenomenon under study? The answer for this study is yes. The nature of the phenomenon is multilevel and occurs over a temporal duration. Therefore, the argument is made that levels and temporal issues are critical for the theory of human capital transformation through human resource development.

Levels issues. For this study, as the resolution of the paradigm issue moved the inquiry into the core theory issue, so the resolution of the core theory issue moved the inquiry into research design issues. Poole and Van de Ven (1989) asserted that in order to dissect and examine how the structure and action components relate to each other, theorists should identify how each component may be manifested at different levels within an organization. "Interesting questions and problems turn on how structural forms and...(how) actions at each level of analysis interrelate and produce constructive tensions," (p. 570). The levels described by Poole and Van de Ven (1989) are conceptual

heuristics designed to illuminate the tensions or oppositions between 1) action and structure (horizontal axis on table) and 2) parts and wholes (vertical axis on table).

Table 4.1 Action and Structure by Level
for Human Capital Transformation

	Human Capital	Structural Capital	Social Capital
Current Study: Individual level (part or micro perspective)	Asset: Individual purposive action to satisfy goals and ambitions *Outcome of* T&D *Input to* value chain	Job routines incorporating technology and tasks *Outcome of* OD *Input to* value chain	Resources embedded in social networks accessed to satisfy goals and ambitions *Outcome of* HRD *Input to* value chain
Future Study: Department/group level	Department/group performance (action) is shaped by collective norms and power relationships within and between groups/departments	Division and integration of labor and resources	Networked in-group patterns enabling the emergence of collective norms, conflict, and power
Future Study: Organization level (whole or macro perspective)	Strategic decision-making (action) of organizational leadership group	Coordination and control of organization value chain	Overall pattern of networked relationships within and outside of organization

From the table, it is clear that there are *both* deterministic (structural) and voluntaristic (action) components of human capital transformation. On the horizontal axis, human capital transformation is seen as a combination of individual purposive action, job routines, and networked relationships. From this perspective, different theoretical foci can emerge from examining the individual level alone. For example, a theorist interested in human capital transformation could develop a theory that describes or explains the relationships between job routine, individual action, and social relationships. The theory would set boundary conditions as appropriate, narrow the scope of the theory to the individual level, and pose testable hypotheses about job routines, employee action, and employee social relationship.

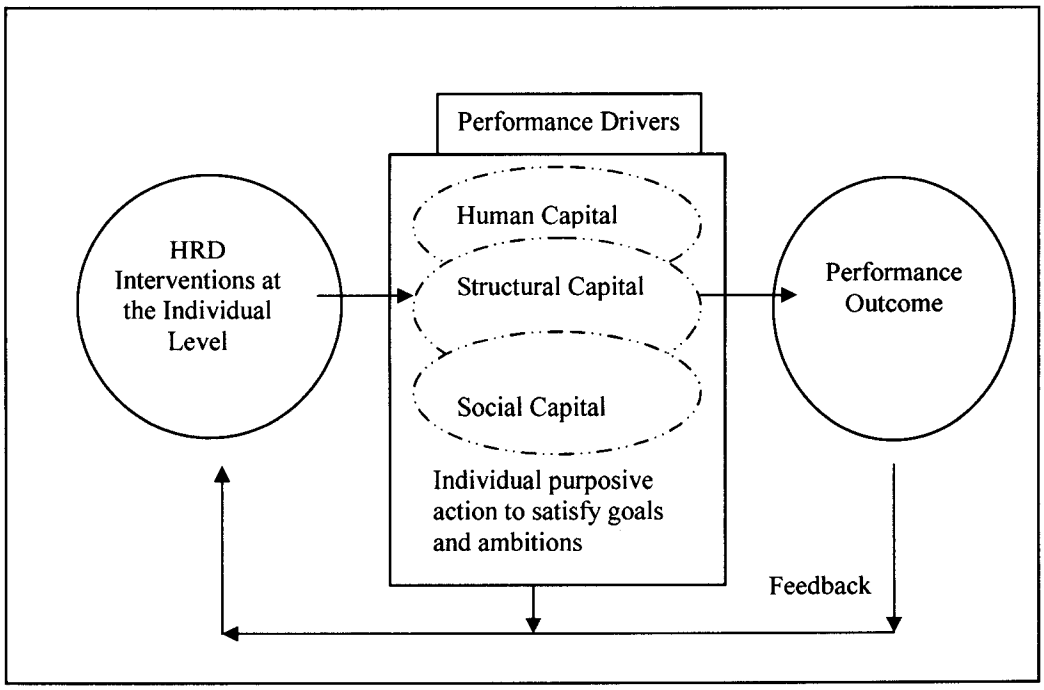
While this study is limited to the individual level, table 4-1 provides examples at the group/department and organizational levels. These examples will be used in the next phase of this research project. As illustrated on the vertical axis of table 4.1, human capital transformation can be understood as a process that includes collective strategic decision-making of the organization leadership group, coordination and control of the organization value chain, and the overall pattern of networked relationships within and outside of the organization. The theory created from these concepts would set boundary conditions appropriate to the organization level and pose testable hypotheses about strategic decision-making, coordination and control, and social relationships.

From table 4.1, human capital transformation could also be understood in terms of the relationships and tensions between levels *and* between structure and action. While not used for this study, juxtaposing the level/structure concepts could offer an interesting research agenda. For example, at the individual level, human capital is viewed as individual, goal-seeking behavior. At the group level, human capital is viewed as collective norms and power relationships between group-members and between groups. At the organization level, human capital is viewed as the collective decision-making actions of the leadership group. The tensions emerge when one tries to understand the relationship between individual goal seeking behavior and the emergence of collective norms and power relationships. These tensions can illuminate areas for future research and theory building.

The contribution of table 4.1 is that it illuminates how the different capital components of value creation are manifested at different organizational levels, and presents theorists with a multiplicity of potential theory-building perspectives. Theorists

can choose to focus on horizontal, vertical, or multilevel relationships for theory development. The table suggests that HRD can impact human capital transformation in nine areas: the individual, group/department, and organization level manifestations of human, structural, and social capital. From this perspective, HRD interventions aimed at transforming human capital should focus on one or more of these nine areas in order to positively impact the organization. For this study, the focus will be on the individual level of analysis. The following figure illustrates how HRD could potentially impact the individual level of the three capital components that create value for organizations. This figure was created before the actual modeling process was undertaken as a tool to understand how the different components may work together to transform human capital.

Figure 4.2 Human Capital Transformation
at the Individual Level



Temporal issues To develop a 'time scale complete' theory of human capital transformation through HRD, decisions had to be made regarding the existence interval, the observation, recording, and aggregation intervals, and the validity interval (Zaheer, et al, 1999). In addition, questions about the role of time in the theory, as posed by George and Jones (2000), needed to be answered. This section synthesizes and resolves the temporal research design issues (described in chapter three) that were important to this study.

The existence interval is the period of time in which human capital is actually transformed. For this study, the existence interval is considered *one event* of the phenomenon—that is to say, whenever an employee takes action to use (or develop new) KSAs to accomplish goals and ambitions, then that is *one instance* of human capital

transformation. Chapter five presents detailed explanations of how the events were defined. These events, then, are the primary data from which both the functional/empirical and interpretive research studies are designed around.

The observation, recording, and aggregation intervals were directly tied to the research designs that were developed to test the theory. For this study, these intervals were subjectively determined and influenced by the paradigms and the constraints of actual data collection in the real world. Surprisingly, during the process of answering questions about these time intervals, it seemed that the intentions and beliefs of the theorist emerged. Consequently, the theorist engaged in a period of critical reflection about the intentions and beliefs of the study in order to gain an explicit understanding of their influence.

The study could be shaped in many different ways by proposing alternative observation, recording, and aggregation intervals (see Zaheer, et al, 1999). Deciding on these intervals should be based on the primary intention of this study—which is to understand how human capital is transformed through HRD—and not on other factors. For example, if the study aggregated the data into beginning (new employees on a learning curve) and compared them to middle (established employees), the findings would not be valid for the intention of the study. The intention of this study is to understand how HRD transforms human capital for sustained performance—the intention is not to understand how HRD is used to train new hires. When new employees are exposed to and shaped by a wide variety of new contextual influences, the performance curve is different looking than the performance curve of an established employee. Therefore, the type of employee (e.g., not a new hire) is important to this study. This

distinction influences the selection of subjects for this study based on the length of time at work. Based on this logic, then, the validity interval should cover the period from which an employee is established in the system until the employee leaves.

The recording and aggregation levels varied depending on the paradigm of the research design. For the case study created to answer research question #1, the recording interval will be determined by the agreement between the researcher and the host organization. The research design suggested a recording interval of two times per week, collected through observational methods. The aggregation level was determined by the nature of the work—for project employees, the aggregation level was the length of the project. For other employees, the aggregation level was subjectively determined to be monthly for a period of at least 12 months.

For the case study created to answer research question #2, the recording and aggregation levels will emerge from the data collected, coded, and analyzed. Employees themselves will be asked to classify their own 'events' of human capital transformation based upon some predetermined guidelines combined with their own interpretation (Peterson, 1998). Over time, it is anticipated that the data will present patterns, or ebbs and flows, which will lead to naturally occurring aggregation levels. Indeed, George and Jones (2000) suggest that "aggregations should be linked to the way in which organizational members bracket their experience to make sense of and derive meaning," (p. 662).

To answer the 'what, how, and why' of the time dimensions of the theory as per George and Jones (2000), this study examined the concepts of the theory (described in

chapter 5). The analysis of the time dimensions of the concepts is presented in chapter five with the presentation of the concepts themselves.

Conceptualization Component 5: Conceptual Modeling of Human Capital Transformation Through Human Resource Development

This section describes the steps taken to create a conceptual model of human capital transformation through HRD. The output of this component is a completed model. The criteria for evaluating the output of this component is to effectively answer the "who, what, when, where, and why?" questions of theory building. The answers to these questions are contained within this section.

Whetten's (2002) modeling as theorizing four step method will be used for this study. The research questions and assumptions as derived from the literature review and conceptual development are restated here.

1) *How does human resource development impact the relationships between human, social, and structural capital?* and

2) *What are the temporal sequences of the process of human capital transformation?*

Definition of human capital transformation: KSAs that are activated to achieve desired outcomes by people embedded in social networks and organizational contexts.

Assumptions about Capital

- Human capital is individual purposive action to satisfy goals and ambitions
    - Human capital is the result of T&D interventions and informal learning

(Human capital development can be influenced by social capital)

- Human capital is a causal factor in value creation

- Structural capital is the job routines and technology that support employee productivity
  - Structural capital is the result of OD interventions
  - Structural capital is a causal factor in value creation
- Social capital is resources embedded in social relationships accessed to satisfy goals and ambitions
  - Social capital is a result of individual goals and skills, which can be developed through T&D
  - Social capital is a result of contextual factors, which can be enhanced through OD
  - Social capital can influence the development of human capital
  - Social capital is a causal factor in value creation
- Intellectual capital = Human capital + structural capital + social capital
  - (per Bontis, 2002)

Assumptions about Investment Patterns

- Employees and organizations invest in things they value
- Employees value autonomy, empowerment, and meaningful work
- Employees use both utilitarian and social identity decision-making processes
- Organizations value competitive advantage
- Organizations use rational cost-benefit decision-making processes

Assumptions about HRD:

- HRD has dual responsibilities to the individual and to the organization
    - Individual: Training and development interventions for specific and generalized knowledge, self assessment and relational skills
    - Organization: Organization development for human, social, and technical work processes

Assumptions about theory building:

- Cross level and mixed level theory building is prohibitively challenging to theorists
- Using paradox techniques provides unique insights to organizational phenomenon
- Multi-paradigm research provides a comprehensive understanding of the phenomenon

The conceptual modeling process for this study consisted of four steps (Whetten, 2002). Step one: The study restated the problem in analytical terms and related/compared key dimensions of the problem (e.g., structure/action paradox). This step illuminated the relationships between structure and action in human capital transformation that enabled more precise and focused inquiry. Step two: The study connected or linked the inquiries from step one to an appropriate mode of inquiry that enabled theory building from multiple paradigms. Step three: The study generated concepts and the relationships between concepts. During the process of steps one and two all of the foundational understandings from the literature review combined to illuminate the appropriate levels of analysis, concepts, and relationships. Step four: The study created a list of propositions

to enable operationalization, which is the second phase of the General Method of Theory Building Research in Applied Disciplines (Lynham, 2002)

The following chart illustrates the key dimensions of human capital transformation for each type of capital at each level. In addition, the HRD dimension is identified by level. The chart provides individual, group, and organization level dimensions—for this study, the individual level will be used. Future studies will focus on the group, organization, and ultimately across levels.

Table 4.2 Key Dimensions of Human Capital Transformation by Level

Level	Human Capital	Structural Capital	Social Capital	HRD
Individual level micro-level parts inquiry identifying concepts and relationships between:	Individual knowledge, skills, abilities Ambitions & goals (action)	Job routines Technology used in performance of job	Resources embedded in individual networked relationships	Training and development
Group/Department mid-level parts inquiry identifying concepts and relationships between	Group/department performance (action) shaped by collective norms and power relationships	Division and integration of labor and resources	Networked in-group patterns enabling the emergence of collective norms, conflict, and power	Organization development aimed at group level change: team building, role definitions, etc.
Organization wholes level inquiry identifying concepts and relationships between	Strategic decision-making (action) of organizational leadership group	Coordination and control of organizational value chain	Overall pattern of networked relationships within and outside of organization	Organization development aimed at whole system change: leadership, mission, vision, structural

At this point of conceptual development, this study focused on identifying the concepts for the individual level. As suggested by Whetten (2002), Post-it® notes were used to identify the salient concepts for each of the four squares at the individual level. In the beginning, Whetten (2002) urges theorists to be inclusive, then use processes of

analysis and critique to pare down the number and scope of the concepts so that they present a parsimonious theoretical model. This process was undertaken to identify the concepts for the theory of human capital transformation through HRD.

Concepts of the theory of human capital transformation through human resource development. Two groups of concepts were developed to answer the two different research questions. The questions require different concepts because of the different analytical methods used to answer the research questions. To restate, the research questions are

1) *How does human resource development impact the relationships between human, social, and structural capital?* and

2) *What are the temporal sequences of the process of human capital transformation?*

For the case study created to answer the first research question, ten individual-level concepts emerged from the Post-It® exercise. The concepts, with related descriptions, are:

1. Employee Knowledge: This concept describes the codified or explicit knowledge held by the employee.
2. Employee Skills: This concept describes the behavior, action, and accumulated experiences of the employee.
3. Employee Attitudes: This concept describes the employee's understanding of his/her place in the world, and it is "reflected in emotional reactions to the outside world," (Yang, in press, p. 4) that are manifested through the interplay of task performance and frequent contextual decisions about how to perform.

4. Employee Goals: This concept describes proximal goal-directed behavior; in other words, "the idea that human beings organize their lives around purposes," in the work environment (Swanson, 1999, p. 15). Specifically, a goal is "the object or aim of an action, for example, to attain a specific standard of proficiency, usually within a specified time limit," (Locke and Latham, 2002, p. 705).
5. Employee Ambitions: This concept describes longer (distal) work/life goal directed behavior that more fully integrates self and work.
6. Job Routines: This concept describes the job routine: stable or changing, individual or collaborative, certain or uncertain.
7. Resources Embedded in Social Networks: This concept describes the types of resources (information, influence, support, etc) found in an individual's social network.
8. Accessing embedded resources. This concept describes the action of seeking and asking for resources in an individual's social network.
9. Probability of receiving resources: This concept describes the probability of receiving asked for resources.
10. Training and Development: This concept describes the informal and formal learning that occurs in the three knowledge domains: explicit (codified), implicit (behavior) and emancipatory (value-laden attitude) (see Yang, 2004, for a detailed discussion of the three knowledge domains).

For the case study created to answer the second question, six concepts emerged from the definition of human capital transformation. The definition is: *individual*

knowledge, skills and attitudes (KSAs) that are activated to achieve desired outcomes by people embedded in social networks and organizational contexts. The six concepts are:

1. Individual knowledge, skills, and attitudes; that are
2. Activated through training and development; in order to
3. Achieve desired outcomes; by
4. People; who are
5. Embedded in social networks; and
6. Organizational contexts.

These concepts do not have precise definitions at this stage of research. During the pilot study, these concepts will be used as 'sensitizing constructs' (Poole, et al, 2000) and clarity and precision will emerge during the research.

Relationships between concepts: answering the 'how' questions. From these concepts, then, phase two of Whetten's (2002) modeling as theorizing process was started. Phase two answers the 'how' questions of theory building. In other words, this phase required the theorist to answer the question: 'how are these concepts related to each other?' During this phase, important decisions regarding the relationships between the concepts were made. This study took Whetten's (2002) suggest that detailed answers to the 'how' questions be postponed until after the first pass of this theory-development phase.

The first pass included identifying the core concept at each level. Next, the core concept was drawn on a piece of paper, and the other concepts in the core sequence were arrayed on either the right or left side of the concept. Concepts to the right of the core concept were considered contributions *of* the core concept. Concepts to the left of the

core concept were considered contributions *to* the core concept. Concepts outside the core sequence were considered moderating types of concepts. According to Whetten, 2002, "another way of thinking about the left versus right distinction is that your left side constructs will be used to explain your core construct (why it is), whereas what is on the right side serves as a justification for the core construct (why it is worthy of study, for example, because it is a significant predictor of organizational performance)," (p. 55).

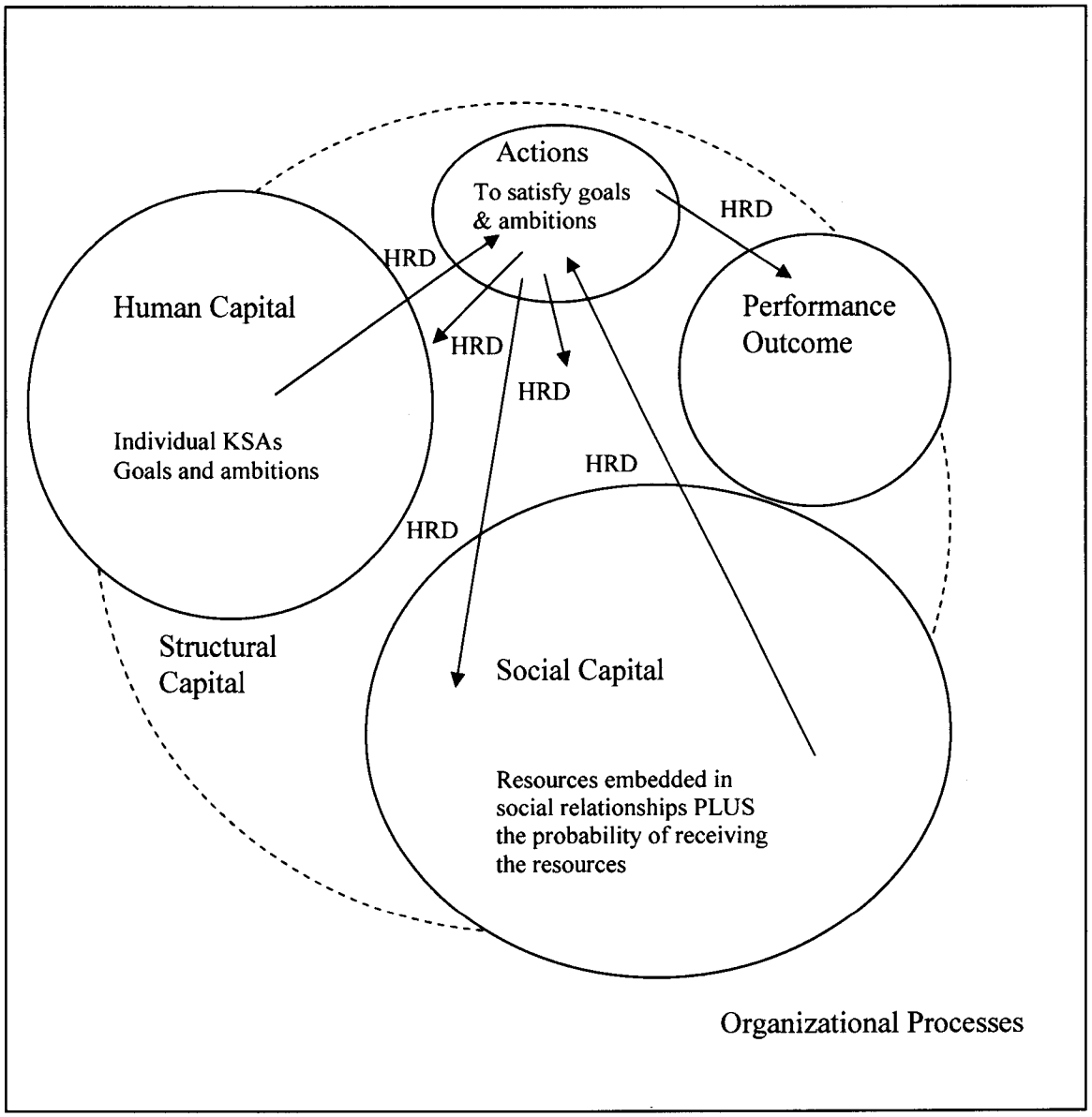
After grouping the core sequence concepts along a horizontal axis, the vertical axis containing moderating concepts was created. "A moderating construct is one that changes the relationship between two other constructs when it is present," (Baron and Kenney, 1986 as found in Whetten, 2002, p. 57). Once the horizontal and vertical axes were created, the next step was to make explicit the relationships between each concept. This involved arrows and feedback loops and using language to describe the relationships.

According to Dubin (1978) the theorist should state the laws of interaction of the concepts, in order to avoid the language of causation in theory building. Alternative perspectives include stating the 'relationships of influence' (Cossett and Lapoint, 1997, as found in Whetten, 2002) or the 'causal links' (Sterman, 2000 as found in Whetten, 2002) of the theory. At this point the theorist in applied disciplines usually identifies *categoric* or *sequential* relationships. A *categoric* relationship is the simplest, and is analogous to "when a, then b." A *sequential* relationship involves the temporal dimension and contains three relational types: a natural law (a logically follows b), a historical law (a generally precedes b), and a developmental law (a emerges from b).

Please see Figure 4.3. For this study, *the six arrows between the concepts are the key HRD intervention points that enable human capital to be transformed into organizational performance outcomes.* These six arrows signify how HRD can impact the relationships between the three value creation drivers identified in the literature review. The intent of the model is to illuminate how interventions can turn *latent* human capital into *activated* human capital.

The chart suggests that HRD is the only tool organizations have in order to align the three value creation drivers for high performance. Further, the chart suggests that accessing social and structural capital is optional to human capital transformation. In other words, employees may not have to use structural or social capital resources in order to perform. However, because of the increased interdependencies in the workplace as described in chapter two, social capital is more likely to be accessed to accomplish individual goals and ambitions at work.

Figure 4.3: Conceptual Model of Human Capital Transformation
Through Human Resource Development



Conceptual assumptions: answering the 'why' questions. The third phase of Whetten's (2002) modeling as theorizing process answers the questions of 'why' we would expect to see certain patterns and not others. During this phase the theorist makes explicit the

conceptual assumptions of the theory. Conceptual assumptions are "the implicit whys underlying an explicit answer to a specific why question," and "are usually described using the language of foundational theories," (p. 59).

For the theory of human capital transformation through HRD, the literature review in chapter two highlighted two foundational theories: utilitarian and social identity theories. These theories explain why people and groups behave as they do: they invest (time, money, effort) in things with an expected return. Likewise, the theory of human capital transformation assumes that individuals, groups, and organizations behave in predictable ways by investing in things they value while expecting some type of return for their investment.

- *Implication: this study assumes that people are more likely to take action when they believe their action will lead towards goal accomplishment*

HRD as a discipline also contributes foundational theories: systems theory, economic theory, psychological theory, and ethics. These four foundational theories offer the bedrock for training and development and organizational development interventions. From these foundations, training and development is expected to 1) contribute to the organization; 2) contribute to the individual; 3) involve well-established (per psychological literature) methods; and 4) do no harm to the organization or its members.

- *Implication: this study expects to see patterns of change and development in individuals, groups, and organizations through targeted, established interventions based on systems, economic, and psychological theories*

Lin's (2001) theory of social structure and action lays the foundation for the role of social capital in human capital transformation. In this view, patterns of relationships involve webs of different types of available resources (to a greater or lesser degree) to employees, groups, and organizations. The theory integrates action and structure and helps predict the impact of networked relationships on learning, developing norms, innovation, and decision-making. For the theory of human capital transformation, this means we would expect to see positive (or negative) reinforcement of individual, group, or organizational behavior and decision-making based on the resources embedded in social networks.

- *Implication: this study assumes that actions to accomplish goals are influenced by networked relationships*

Finally, the theory of human capital transformation relies on a relatively new holistic learning theory to understand the different types of knowledge that contribute to human capital transformation. Yang (2004) offers an integrative and holistic framework to understand the different types of knowledge; from that typology, specific training and development interventions can be targeted to enable growth in the three knowledge areas. The three knowledge areas are 1) explicit knowledge: knowledge that "refers to clear and certain mental apprehension that is transmittable in formal and systematic format," (p. 3); 2) implicit knowledge: "personal and context-specific familiarity.hard to formalize and communicate" (p. 3); and 3) affective knowledge, or the emancipatory facet of knowledge: "indicated by feelings and emotions people have toward the objects and situations around them...(it) defines one's view of what the world ought to be," (p. 4).

- *Implications: The study expects to see patterns of change and development of 1) codified knowledge through explicit knowledge interventions; 2) relational behavior through implicit knowledge interventions; and 3) goals and ambitions through emancipatory knowledge interventions.*

Contextual assumptions: answering the 'when, where, and who' questions. Phase four of Whetten's (2002) modeling as theorizing process requires the theorist to answer the 'when/where/who' type of questions through identifying the contextual assumptions of the theory. This step satisfies Dubin's (1978) boundary condition requirements for building theory. According to Whetten (2002), "the failure to understand how contextual constraints temper general claims significantly undermines the utility, and hence, the credibility, of scholarly explanations," (p. 61). Theories in applied disciplines must balance the tension between generalizable explanations and contextualized explanations—a difficult job, but one that is required in order to develop a practical and good Lewinian theory.

For the theory of human capital transformation, many of the boundary conditions were identified by the foundational theories of the theory. From the utilitarian and social identity perspectives, the theory should hold when individuals working in business organizations perceive that investments will be rewarded in a consistent and understandable fashion by the organization or its members. Conversely, the theory will not hold when organizations or its members do not behave in a predictable or understandable (to the employees).

From the HRD foundational theories, the theory is expected to hold when organizations and its members 1) make economic decisions based on a capitalist free

market; 2) make structural decisions based on an understanding of how systems theory works; and 3) make human capital decisions based on an understanding of psychological theories of learning, knowing, and doing. These foundations help the theorist predict and explain how human capital is transformed through HRD.

Postulates and Propositions of A Theory of Human Capital Transformation Through Human Resource Development

The following is a summary the major ideas of the theory by providing a list of postulates (untested assumptions) and propositions for three of the four dimensions of the phenomenon. Dozens of postulates and propositions could be created for this study; however, only those that could potentially yield the greatest amount of new knowledge are presented in this study. First, the postulates focused on human resource development, social, human, and structural capital are presented. The postulates basically recap the findings of the research conducted for this study. Next, the five propositions are listed for the *theory of human capital transformation through human resource development.* These propositions will act as catalysts for the subsequent phases of the General Method. During the actual application of the confirmation and disconfirmation phase (not a component of this dissertation), it is anticipated that the data collection will influence the development of additional or modified propositions.

Postulates. HRD postulates include

- Postulate #1: Human resource development has responsibilities to individuals and to organizations.

- Postulate #2: Individual knowledge is manifested in three facets: explicit, implicit, and emancipatory. Training and development interventions can target one, two, or all three manifestations of knowledge in order to transform human capital.

Social capital postulates include

- Postulate #1: From (Lin, 2001), "valued resources are embedded in social structures in which positions, authority, rules, and occupants (agents) usually form pyramidal hierarchies in terms of the distribution of valued resources, number of positions, level of authority, and number of occupants," (p. 75).
- Postulate #2: Resources embedded in social networks are held by alters or alter's alters. Accessing these resources is a function of action (on the part of the individuals involved) and type of tie.

Structural capital postulates include:

- Postulate #1: Structural capital supports employee's productivity on the job. It is what remains in the office after the employee goes home, and includes communication and other technologies, formal structures, division of labor, and value chain control and command functions.

Human capital postulates include:

- Postulate #1: Employees own their human capital, organizations can only borrow it.
- Postulate #2: Employees can choose to invest and reinvest their human capital into their environment.
- Postulate #3: Human capital is the sum of the knowledge, skills, and attitudes of the employee.

Propositions. The propositions that are presented focus on human resource development, human, structural, and social capital. Structural capital is also viewed as a mediating factor, always in the background influencing (to some greater or lesser degree) the relationships between human resource development interventions and social and human capital.

The training and development propositions are:

- Proposition #1: *Training and development interventions* aimed at developing explicit job knowledge are positively associated with an increase in accessing structural capital to accomplish work goals.
    - Hypothesis #1: Individuals with developed explicit job knowledge more frequently use organizational resources than those with underdeveloped job knowledge.
- Proposition #2: *Training and development interventions* aimed at developing implicit and emancipatory knowledge is positively associated with the emergence of an employee's explicit work goals and ambitions.
    - Hypothesis #2: Individuals with developed implicit and emancipatory knowledge are more strongly guided by their goals and ambitions than those with less development in those two knowledge domains.
- Proposition #3: *Training and development interventions* aimed at developing social network understanding and relational skills are positively associated with improved performance.
    - Hypothesis #3: Individuals who develop an accurate understanding of their social network perform better than those who do not.

- Hypothesis #4: Individuals who develop strong interpersonal or relational skills have a higher probability of receiving requested resources from alters.

The social capital propositions are:

- Proposition #4: *The frequency of seeking social resources* is positively related to the strength of the employee's explicit work-related goals and ambitions.
  - Research Hypothesis #5: Individuals who perceive they have strong work goals and ambitions will more frequently turn to social connections than individuals with weak or unexamined goals and ambitions.
- Proposition #5: High performers differ from low performers in that their social network supports high performance, however that is manifested.
  - Research Hypothesis #6: For individuals classified as high performers, the types, number, and diversity of network ties vary with job routines.
  - Research Hypothesis #6a: High performing individuals with changing, collaborative, and uncertain job routines have highly diverse, multiple, and varied types of ties.
  - Research Hypothesis #6b: High performing individuals with stable, independent, and certain job routines have homogenous, few, and similar types of ties.

Summary

A conceptual and theoretical framework for the theory of human capital transformation through HRD has been reported in this chapter and provides the basis for the next phase of theory building—operationalization (Lynham, 2002). The

operationalization phase requires the theorist to take the propositions from the first phase and convert them to testable hypotheses. The above list of propositions represents the best opportunities for contributing to an understanding of how HRD transforms human capital for organizational performance.

CHAPTER FIVE:

OPERATIONALIZATION OF A THEORY OF HUMAN CAPITAL TRANSFORMATION THROUGH HUMAN RESOURCE DEVELOPMENT

The operationalization phase of the General Method is "essentially an explicit connection between the conceptualization phase and practice" (Lyhnam, 2002, p. 232) within the phenomenon. During this phase, the conceptual framework is advanced into confirmable, testable hypotheses. The outcome of a completed operationalization phase is an *operationalized theoretical framework.* The specific process for reaching this outcome, as in the first phase of conceptual development, is dependent upon the phenomenon being researched and the researcher's judgments as to specific strategies.

For this study, operationalization of the conceptual development of *human capital transformation through human resource development* was conducted to satisfy two different research questions:

1) *How does human resource development impact the relationships between human, social, and structural capital?;* and

2) *What are the temporal sequences of the process of human capital transformation?*

The first question relies on case study design and methodology to: 1) *explore the relationships between concepts,* 2) *assess the impact of changes between constructs, and* 3) *understand how employees perceive their goals, their work, and their embeddedness in organizational and social contexts as they make and take action to accomplish their*

goals. This case study research is designed to embrace both qualitative and quantitative data. The ten concepts of the theory of human capital transformation through human resource development (identified in the conceptualization phase) are advanced into empirical, testable indicators that are necessary to confirm or disconfirm the theoretical propositions.

The second question sought to operationalize human capital transformation for a different research purpose. The purpose is to *understand the process of human capital transformation through human resource development as it unfolds over time.* This question requires the creation of second case study, using a second set of concepts developed in chapter 4, that also relies on qualitative and quantitative research methods. However, this case study focused on identifying the *temporal dependencies* in the process of human capital transformation through human resource development, and not on the *relationships between the constructs* of the theory.

This chapter presents the operationalization of *human capital transformation through human resource development* through the two research questions. The first research question within the operationalization phase uses *case study research design and methods* to pursue testable hypotheses. The second research question within the operationalization phase uses a *case study design and process research methods* to uncover the developmental sequencing of human capital transformation through human resource development.

Operationalization of the Theory Through Research Question #1

How does human resource development impact the relationships between human, social, and structural capital? This question guides the operationalization for the first case study design. The concepts from chapter four are now advanced into empirical indicators and listed below. A literature search was conducted to identify and use existing instruments that have been previously used and validated. Permission will be obtained for the instrument(s) as required.

1) Employee Knowledge:
    a. The concept describes the codified or explicit knowledge held by the employee.
        i. Empirical indicator #1: *the numeric results of an instrument that tests for knowledge* will be created using the principles and process of the Results Assessment System (Swanson & Holton, 1999).
        ii. Empirical indicator #2: Field observation and narrative data collection analyzed by categories of codified or explicit knowledge as identified in empirical indicator #1.
2) Employee Skills:
    a. This concept describes the behavior, action, and accumulated experiences of the employee.
        i. Empirical indicator #1: *the numeric results of an instrument that tests for expertise* will be created using the principles and process of the Results Assessment System (Swanson & Holton, 1999).

ii. Empirical indicator #2: Field observation and narrative data collection analyzed by categories of employee skills as identified in empirical indicator #1.

3) Employee Attitudes:

a. This concept describes the employee's understanding of his/her place in the world, and it is "reflected in emotional reactions to the outside world," (Yang, in press, p. 4) that are manifested through the interplay of task performance and frequent contextual decisions about how to perform.

i. Empirical indicator #1: *numeric result from an instrument that tests for self-efficacy at work.* The instrument that will be used is a twelve-item scale based on previous research (Martocchio & Hertenstein, 2003, as found in Potosky & Ramakrishna, 2003).

ii. Empirical Indicator #2: Field observation and narrative data collection analyzed by categories of employee attitudes as identified in empirical indicator #1.

4) Employee Goals:

a. This concept describes proximal goal-directed behavior; in other words, "the idea that human beings organize their lives around purposes," in the work environment (Swanson & Holton, 1999, p. 15). Specifically, a goal is "the object or aim of an action, for example, to attain a specific standard of proficiency, usually within a specified time limit," (Locke & Latham, 2002, p. 705).

i. Empirical indicator: *numeric result from an instrument developed by Button et al.* (1996) (as found in Locke & Latham, 2002) that includes two 8-item scales measuring goals towards learning orientation and performance orientation.

5) Employee Ambitions:

a. This concept describes longer (distal) work/life goal directed behavior that more fully integrates self and work. The focus of this concept is on the *intentions* of a person.

i. Empirical indicator #1: the *model of action phases* (Heckhausen & Gollwitzer, 1987, as found in Brandstatter, Heimbeck, Malzacher & Frese, 2003), which combines *goal* intention with *implementation* intention of goals.

ii. Empirical indicator #2: Field observation and narrative data collection analyzed by categories of ambitions as identified in empirical indicator #1.

6) Job Routines:

a. This concept describes the task characteristics in the employee's job routine. The four characteristics used in this study are task complexity, task interdependence, goal interdependence, and reward interdependence (van Vijfeijken, Kleingeld, van Tuijl, Algera, & Thierry, 2002).

i. Empirical indicator of task complexity: Following Wood (1986), as found in van Vijfeijeken, et al, three complexity types will be assessed: component complexity, co-ordinative complexity, and

dynamic complexity. The measurements range from low to very high, and will combine to produce an overall picture of the job routine.

ii. Empirical indicator of task interdependence: Defined as "the degree to which....members have to exchange information and/or means for the completion of the...task" (van Vijfeijeken, et al, 2002, p. 366). The empirical indicator is a combination of the interdependence *between the workers* and between the *workers and structural capital*. An instrument will be developed, designed, and tested for this measure.

iii. Goal interdependence: Defined as "the way in which goal attainment of an individual is influenced by goal attainment of others" (van Vijfeijeken, et al, 2002, p. 367). Following van Vijfeijeken, et al, the measure of goal interdependence is *high* when one person's goal attainment is "positively influenced by the attainment of goals by other group members," (p. 367); conversely, when an individuals goal attainment is not influenced by the goal attainment of others, the measure is *low*. An instrument will be developed, designed, and tested for this measure.

iv. Reward interdependence: Defined as "the extent to which the obtainment of rewards by others influences the obtainment of rewards by one self," (ibid., p. 367). This measure is similar to the goal interdependence measure, ranging from high to low and

positive to negative. For example, "the attainment of one's individual rewards (can be) negatively influenced by the attainment of rewards by other group members," (p. 367). An instrument will be developed, designed, and tested for this measure.

b. Resources Embedded in Social Networks: This concept describes the types of resources (information, influence, support, etc) found in an individual's social network.

   i. Empirical indicator: *results of social network analysis survey* that will be designed to identify the types of resources embedded in an employee's social network. The method used to measure resources include *name generator*, followed at a later time by *position generator* surveys. Follow up survey questions will be posed to the identified alters in the network in order to assess the types of resources exchanged, frequencies of exchange, and probability of exchange.

7) Accessing embedded resources:

   a. This concept describes the action of seeking and asking for resources in an individual's social network.

      i. Empirical indicator: *the frequency that an employee turns to others for resources at work.* This information will be gathered by observing work behavior and interviewing employees and their

alters as identified in the social network analysis name and position generator surveys.

8) Probability of receiving resources:
    a. This concept describes the probability of receiving asked for resources to accomplish work goals.
        i. Empirical indicator: based on the work of Johnson & Knoke (submitted for publication).
9) Training and Development:
    a. This concept describes the informal and formal learning that occurs in the three knowledge domains: explicit (codified), implicit (behavior) and emancipatory (value-laden attitude) (see Yang, 2003, 2004, for a detailed discussion of the three knowledge domains).
        i. Empirical indicator: *narrative obtained by interview with the employee.* The narrative will provide understanding of the employee's perceptions of training and development. The narrative will be analyzed by creating categories for each of the three knowledge domains.

In order to organize the above empirical indicators into an easily accessed format, a table was created to identify the functional/empirical and interpretive or social constructionist research methods used in the case study for research question #1.

Table 5.1: Case Study Research Agenda by Category

Empirical Indicators For:	Human Capital	Social Capital	Training & Development	Job Routines
Empirical / Functional	*Instrumentation:* o Knowledge o Expertise o Self-Efficacy o Goals o Ambitions	*Social Network Analysis:* o Name and position generator o Frequency count o Network analysis o Relational analysis o Probability calculation	*Categorization of knowledge domains (Instrumentation)* o Explicit (codified) o Implicit (behavior) o Emancipatory (attitude)	*Instrumentation:* o Task Complexity o Task Interdependency o Goal Interdependency o Reward Interdependency
Interpretive / Social Construction	Observation Interviews o Coding based on emergent categories	Observation Interviews o Coding based on emergent categories	Observation Interviews o Coding based on emergent categories	Observation Interviews o Coding based on emergent categories

Testable Hypotheses for Research Question #1

Using the empirical indicators defined above, the *propositions* identified in chapter four were then advanced into *testable hypotheses* in order to complete the operationalization phase of the General Method. To repeat: the research question is: *how does human resource development impact the relationships between human, social, and structural capital?* Three of the five propositions developed in chapter four focused on the role of training and development interventions to explain how human capital is transformed. The two remaining propositions focus on the role of structural and social capital to explain how human capital is transformed. The propositions with their accompanying hypotheses are listed below:

1. Proposition #1: *Training and development interventions* aimed at developing explicit job knowledge are positively associated with an increase in accessing structural capital to accomplish work goals.
    a. Hypothesis #1: Individuals with a high degree of explicit job knowledge more frequently use organizational resources than those who have less explicit job knowledge.
2. Proposition #2: *Training and development interventions* aimed at developing implicit and emancipatory knowledge is positively associated with the development of an employee's explicit work goals and ambitions.
    a. Hypothesis #2: Individuals with developed implicit and emancipatory knowledge are more strongly guided by their goals and ambitions than those with less development in those two knowledge domains.
3. Proposition #3: *Training and development interventions* aimed at developing social network understanding and relational skills are positively associated with improved performance.
    a. Hypothesis #3: Individuals who develop an accurate understanding of their social network perform better than those who do not.
    b. Hypothesis #4: Individuals who develop strong interpersonal or relational skills have a higher probability of receiving requested resources from alters.
4. Proposition #4: *The frequency of seeking social resources* is positively related to the strength of the employee's explicit work-related goals and ambitions.

a. Research Hypothesis #5: Individuals who perceive they have strong work goals and ambitions will more frequently turn to social connections than individuals with weaker or unexamined goals and ambitions.

5. Proposition #5: *High performers differ from low performers in that their social network supports high performance*, however that is manifested.
    a. Research Hypothesis #6: For individuals classified as high performers, the types, number, and diversity of network ties vary with job routines.
        i. Research Hypothesis 6a: High performing individuals with changing, collaborative, and uncertain job routines have highly diverse, multiple, and varied types of ties.
        ii. Research Hypothesis 6b: High performing individuals with stable, independent, and certain job routines have homogenous, few, and similar types of ties.

Operationalization of the Theory Through Research Question #2

The second research question is: "*what are the temporal sequences of the process of human capital transformation?*" Because the temporal sequence of human capital transformation is relatively unexplored, it is helpful to understand that the relationships and linkages between empirical observations and conceptual categories may change during the research collection phase (Poole and Van de Ven, 2000). This, in turn, would cause an iterative process in theory research by requiring adjustments in the conceptual categories. For this study, preliminary categories have been created with the understanding that they may change during data collection.

The first step of operationalization for the second research question was to understand the research phenomena as a *developmental sequence* that occurs over time. The second step of operationalization for this research question was to advance the developmental statements into the *categories* that guide and shape data collection. To complete these two steps, two propositions were selected based on their potential contribution to understanding *human capital transformation through human resource development*. In the future, other propositions can also be restated as a part of the longer-term research agenda.

Step #1: Developmental Statements

The two propositions are listed here (from chapter 4) and then advanced into the developmental statements required for this case study:

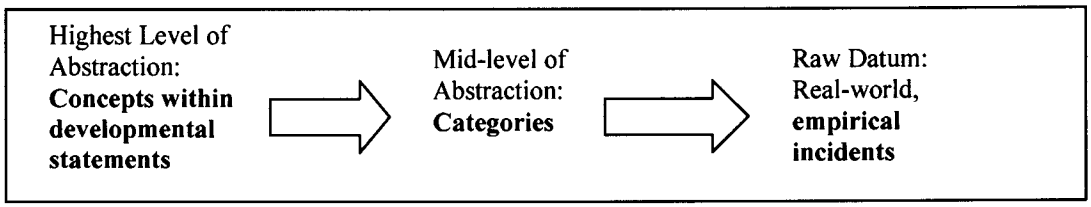
- Proposition #1: Human resource development interventions aimed at developing implicit and emancipatory knowledge is positively associated with an employee's explicit work goals and ambitions.
- Developmental statement #1: Individuals who perceive they are developing implicit and emancipatory knowledge will develop a stronger sense of goals and ambitions and be more able to explicitly communicate those goals and ambitions.
- Proposition #2: human resource development interventions aimed at developing explicit social network knowledge and interpersonal or relational skills are positively related to an increase in accessing and receiving social capital.

- Developmental statement #2: Individuals who perceive they are developing 1) an understanding of the potential impact of their social connections; and 2) higher level interpersonal or relational skills; will increasingly seek and receive help (information, resources, connections, etc.) from colleagues over time.

Step #2: Categories for Data Collection

To move down the ladder of abstraction from developmental statements to raw data, the developmental statement then had to be broken down into categories. These categories guide and shape how raw data (empirical incidents) are selected.

Figure 5.1: Movement from Abstract to Concrete for Research Question #2



The above figure describes the movement from concept to category to empirical incidents required to answer the second research question. An incident is defined as either 1) a recurring activity in, or 2) observed changes in any one of the categories listed above. An incident is entered in to a qualitative database as a "bracketed string of words about a discrete incident...raw words, sentences, or stories collected from the field or from archives cannot be entered into a series until they are bracketed into a datum" (p. 133).

To know where to look for the incidents for each category, decisions had to be made about the type and quantity of data sources. In other words, what are the raw data

for each incident? Based on an analysis of the developmental statements, the categories with their accompanying data sources are listed below:

Categories for developmental statement #1.

1. Individuals in training
2. Training for explicit knowledge
3. Accessing organizational resources
4. Accessing social resources
5. Accomplishing work goals

Raw datum to be collected for developmental statement #1.

- Category #1: *Individuals in Training*
  - Content and delivery information on training
  - Interviews
  - Observations
- Category #2: *Training for Explicit Knowledge*
  - Content and delivery information on training
  - Interviews
  - Observations
- Category #3: *Accessing Organizational Resources*
  - Questionnaire (name and position generator from social network analysis)
  - Observation
  - Interview
- Category #4: *Accessing Social Resources*
  - Observation

- Interviews
- Social network analysis

- Category #5: *Accomplishing Work Goals*
  - Archival data: performance reviews, other documents that can illustrate the accomplishment of work goals.
  - Observations
  - Interviews

Categories for developmental statement #2.

- Individuals in training for social network understanding
- Individuals in training for interpersonal or relational skills
- Accessing social networks
- Receiving resources from social networks
- Accomplishing work goals

Raw datum to be collected for developmental statement #1.

- Category #1: *Training for Social Network Understanding*
  - Interviews
  - Observations
  - Organizational records when available
  - Training content and delivery information
- Category #2: *Training for Interpersonal or Relational Skills*
  - Interviews
  - Observations
  - Organizational records when available

    - Training content and delivery information
- Category #3: *Accessing Social Networks*
    - Observations
    - Interviews
    - Questionnaire (social network analysis)
- Category #4: *Receiving Resources from Social Networks*
    - Observations
    - Interviews
    - Questionnaire (social network analysis)
- Category #5: *Accomplishing Work Goals*
    - Organizational records
    - Observations
    - Interviews

Operationalization Summary

This chapter has presented two forms of operationalizing human capital transformation through human resource development. The first form operationalized the theory in order answer the first research question: *how does human resource development impact the relationships between human, social, and structural capital?* The second form was created to answer the second research question: *what are the temporal sequences to the process of human capital transformation?*

These two different forms will illuminate different facets of *human capital transformation through human resource development.* Further, they offer a multiple

paradigm perspective on how it is that human capital is transformed through human resource development. Both forms use case study designs but will use different research methods to answer the research questions. These methods are highlighted in the next chapter, namely, confirmation and disconfirmation of a *theory of human capital transformation through human resource development.*

CHAPTER SIX:

CONFIRMATION/DISCONFIRMATION OF A THEORY OF HUMAN CAPITAL TRANSFORMATION THROUGH HUMAN RESOURCE DEVELOPMENT

As described in chapter five, this study created two different case studies for confirming or disconfirming the theory of human capital transformation through human resource development. The two case studies answer different research questions:

1) *How does human resource development impact the relationships between human, social, and structural capital?;* and

2) *What are the temporal sequences of the process of human capital transformation?*

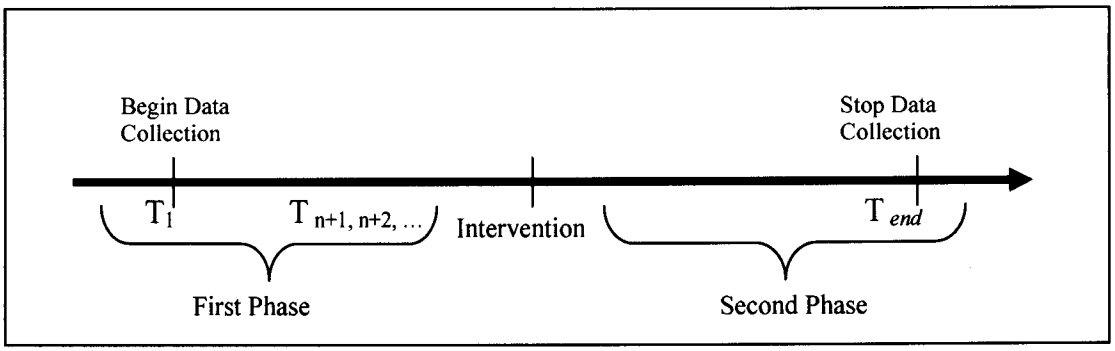
These two case studies will be undertaken after the completion of this dissertation. For this study, the intent is to develop research designs that, if carried out, would satisfy the third phase of confirmation/disconfirmation of the General Method of Theory Building Research in Applied Disciplines.

Human Resource Development Interventions Embedded in Research Designs

For this study, the two proposed case study research designs are longitudinal with human resource development interventions being created and implemented during the data collection phase of the case studies. This is similar to a quasi-experimental research design. The human resource development interventions are necessary in order to confirm

or disconfirm the propositions as listed in chapter four. In both case studies, data collection will begin, the intervention will be implemented, and the data collection will continue. Thus, data collection for both case studies will take place pre- and post-intervention. The intent is to understand the *theory of human capital transformation through human resource development* by implementing an HRD intervention and assessing the results (see figure 6.1.)

Figure 6.1: Data Collection Phases for The Theory of Human Capital Transformation Through Human Resource Development



Research Design for Research Question #1

This section presents the research design for answering the first research question: *How does human resource development impact the relationships between human, social, and structural capital?*

This case study design will eventually be a multi-case descriptive study—no causal statements will be generated. The design calls for completion of a pilot study prior to the implementation of the full multi-case case study.

Reliability and Validity

This case study cannot contribute to the discipline of human resource development without ensuring the reliability and validity of its design and implementation. Therefore, this plan adopts several strategies to ensure reliable and valid findings. Multiple sources of data (see chapter 5) help to ensure construct validity. Further, key informants will review the findings during the iterative process of data collection. The data collection procedures have been explicitly developed in order to ensure that the two researchers will produce reliable interpretations and analyses. Inter-rater agreement between researchers will be tested throughout data collection and analysis, and adjustments, corrections, and/or consensual agreements will be made throughout. All of these tactics improve the construct validity of the concepts being examined.

Overview of Design Issues for Research Question #1

Based on the phenomenon under study, the unit of analysis is the individual employee. In other words, one employee equals one case. The pilot case, then subsequently the full complement of cases, will undergo analytic generalization (not statistical generalization) in order to ascertain the degree to which the propositions are true. Further, the key definitions of the operationalized constructs (see chapter 5) are based on prior research, so that the findings may be compared with the earlier findings. These comparisons increase the potential for the study to contribute to the knowledge base of the discipline of human resource development.

The data collected will use the technique of *pattern matching* (Yin, 1984). While the criteria for interpreting these findings does not have a set standard, (e.g., how much does the pattern have to match in order to proclaim meaningful findings?), several pieces

of information from the same case may be related to a theoretical proposition as described in chapter four. In addition, the analytical mode of *explanation building* will also be used during the analysis phase.

As described earlier, the study involves multi-case design. The selection criteria for the cases are described here. The pilot cases will be selected on convenience and access to willing participant organizations. The subsequent ten cases will be selected based on a combination of 1) geographic location (close to researchers); 2) type of industry (the study seeks to obtain a wide industry range); 3) organizational characteristics (the study seeks organizations who are experienced in the phenomenon) and 3) type of job (the study seeks to examine similar types of jobs).

To complete this case study research design, a case study protocol was created in order to increase the reliability of the study. The reliability of this study is increased to the degree that the protocol provides detailed, explicit information that are easily replicable by other researchers. Please note: the protocol is a working document—the findings from the pilot study may modify the protocol during the data collection and analysis phases. The elements of the protocol are listed below.

Protocol for Research Question #1

According to Yin (1984), a case study protocol contains five components. The components are 1) field procedures, 2) resources, 3) case study questions, 4) analysis plan, and 5) case study report. In order to answer research question #1, the protocol for each component is discussed.

Field procedures: gain access to pilot cases. The principal investigator's personal contacts in business and industry will generate the two cases required to complete the

pilot testing. Various options include: Deloitte Consulting, practitioner contacts through the University of Minnesota Ph.D. program, and various organizations located in Rochester, Minnesota including the Mayo Clinic and IBM.

Field procedures: gain access to implementation cases. In collaboration with mentors, the principal investigator will conduct research to identify the potential pool of organizations that satisfy the selection criteria (described earlier). Phone and in-person contacts will be made to organizational leaders. During these preliminary conversations, details about the study will be shared and individual cases (embedded in the organization) will be preliminarily identified. These individuals will then be brought in to the discussions. The principal investigator will follow all IRB guidelines and ensure full and informed consent of the research participants. (Note: if, during these negotiations, the research organization has issues, problems, or practice concerns closely aligned with those of this study, attempts will be made to incorporate them into the research design as appropriate).

Field procedures: how to train investigators. Both the principal and co-researcher will work closely to develop consistent interpretations of the research questions, data collection, and data analysis requirements. Further, both will identify the major skill requirements for case study research, identify areas needing development, and set and accomplish developmental skill-enhancement objectives. Prior to the pilot cases, both people will meet with outside specialists (from the University of Minnesota) in order to obtain an objective opinion of the consistency and readiness level to begin data collection.

Resources: people. The principal investigator will seek to enlist a co-researcher to the project. The co-researcher will be a Ph.D. student based out of the Rochester, Minnesota campus who is interested in gaining experience in case study research. Depending on the co-researcher's specific research agenda, another dissertation may be generated from the findings of this work. A co-researcher is critical to this study in order to increase the reliability of the results.

Resources: outside specialists. The principal investigator will also seek the assistance and guidance of qualitative and quantitative research specialists at the University of Minnesota in order to produce the best practices in design, method, and analysis.

Resources: technology. Computers and computer software are available to complete this study.

Resources: time. The pilot cases and subsequent implementation cases require an extensive time commitment from the principal and co-researchers. This research design is built to allow for flexibility in accommodating both research participant and researcher's contingent needs.

Case study questions. The following questions and accompanying lists of data sources guide the researchers throughout the pilot and implementation cases. These questions may be amended as necessary during the iterative process of data collection and analysis. The questions are based on the major categories of *the theory of human capital transformation through human resource development.*

Case study questions and sources of data for category #1. What knowledge is required for the job?

a. Organizational records: job descriptions, interview human resources

b. Instrumentation: task analysis and test

c. Interviews: employee perceptions

d. Observation

What skills do the employee possess?

e. Organizational records: performance reviews, resumes

f. Instrumentation: expertise analysis and test

g. Interviews: employee perceptions

h. Observation

What is the general attitude of the employee?

i. Organizational records: performance reviews, results of 360 degree feedback if available

j. Instrumentation: self-efficacy test

k. Observation

What are the learning and performance goals of the employee?

l. Organizational records: performance reviews with developmental plans if available

m. Instrument: proximal and distal goals and implementation of goals tests

n. Interviews: employee perceptions

Case study questions and sources of data for category #2. What are the job routines? How complex is the job?

a. Organizational records: job descriptions and qualification assessments if available

b. Instrumentation: job complexity test

c. Interviews: employee perceptions

d. Observation

How interdependent is the job?

e. Organizational records: job flow, process analysis if available

f. Instrumentation: job interdependency test

g. Interviews: employee perceptions

h. Observation

How interdependent are the goals of the employee to those he/she works with?

i. Instrumentation: goal interdependency test

j. Interviews: perceptions of employees

k. Observations

How interdependent are the rewards of the employee to those he/she works with?

l. Instrumentation: reward interdependency test

m. Interviews: perceptions of employees

n. Observations

Case study questions and sources of data for category #3: social capital. What resources exist in the social network of the employee?

a. Social network analysis -- ego-centric

   i. Name generator method

   ii. Position generator method

b. Interviews to identify types of resources: ego and alters identified in social network analysis

c. Organizational records: position/role or organization chart to identify formal structure

d. Interviews: employee perceptions of resources

e. Observations

How often does the employee turn to social network for help to accomplish work goals?

f. Tracking log: participant completes log of frequency and type of access requests

g. Interviews: employee perceptions

h. Observations

How often does the employee receive the resources asked for?

i. Interviews: ego and alters

j. Frequency count as per item #2: participant tracking log

k. Observations

Case study questions and sources of data for category #4: training and development. The questions are: How do we train to develop explicit knowledge?; How do we train to develop implicit knowledge?; How do we train to develop emancipatory knowledge?; How do we create these developmental interventions?; and What impact, if any, do these developmental interventions have?

a. For all of the above questions, the sources of data are:

   i. Research adult learning theories

   ii. Research training and development theories

   iii. Interview scholars

iv. Interview practitioners

v. Design appropriate interventions, test, administer

vi. Interview research participants

A final question pertaining to the overall validity of the study is: what other forces may influence the findings and cloud the 'true' results?

b. Examine impact of possible age, cohort, and transient influences

c. Examine outside, contextual events during study

Analysis plan for research question #1. This study will rely on the theoretical propositions to organize the case study. In other words, the propositions as described in chapter 5 will guide the data collection plan, the actual collection of data, and the interpretation of the data.

From the analytic strategy, the study will then use *pattern matching* and *explanation building* as the modes of analysis. Time series analysis and program logic models were not selected for the case study design because similar analytical modes are found in the second case study design also created for this study.

Case study reports. According to Yin (1984), preliminary decisions about the case study report need to be made at the beginning of the research process. These decisions include 1) what is the structure of the report; 2) who is the intended audience of the report; 3) when to start writing; 4) what is the appropriate level of anonymity in cases; and 5) how to further increase the construct validity of the case.

Case study report: structure. A chronological structure was selected because of the action research component of the research design: data will be collected *before* the

intervention and *after* the intervention. Therefore, there are two sections to the report: "Before Intervention" and "After Intervention."

Case study report: intended audience. Three potential audiences for this report have been identified. Depending on the findings and the demands for disseminating the information, one, two, or three alternative reports may be created as described below.

- Practitioners: The report will focus on the real-time assessments, processes and changes that were observed, recorded, and analyzed during the research study.
- Scholarly colleagues: The report will focus on the theoretical implications of the findings of the study.
- Funders: The report will focus on the significance of the findings to the discipline of human resource development, to employee development, and to economic development.

Case study report: writing schedule. The report will be drafted in the six sections described below.

1. Bibliography section: can be completed after the literature review and updated as necessary
2. Methodological section: can be drafted after the procedures for data collection and analysis were designed
3. Descriptive data about the cases being studied section: can be drafted after data collection and before analysis begins
4. Data analysis section: drafted and redrafted as analysis proceeds
5. Findings section: drafted after analysis section is complete
6. Implications section: final section

Case study report: anonymity issues. For this multi-case study, the individual employees will remain anonymous and a cross-case analysis will be presented

Case study report: construct validity. After the analysis and implications have been drafted, select research participants will review the sections for validity

Case Study for Research Question #1 Summary

As previously noted, this case study design offers a multiple case descriptive study designed to answer the first research question: *how does human resource development impact the relationships between human, social, and structural capital?* This case study design uses both qualitative and quantitative research methods, incorporates strategies to improve the reliability and validity of the findings, includes a detailed protocol for both researchers to follow, and has identified potential audiences for the case study report.

The implementation of the pilot study research design will follow this study as a part of a continuing program of theory research.

Research Design for Research Question #2

The second research question is: *What are the temporal sequences of the process of human capital transformation?* This section presents the second case study designed to answer this question. There are three major planning components of this case study: 1) formulate the research plan; 2) formulate the plan for data collection; and 3) formulate the plan for transforming coded data into forms suitable for analysis. These three major components are described below. The outcome from completing each component is a

valid and reliable case study that will illuminate the developmental sequences of *human capital transformation through human resource development.*

Formulate Research Plan

This section describes case study by 1) describing the inferential strategies, 2) identifying the relevant forces of change, 3) identifying the sampling strategies, and 4) identifying the appropriate research methods to the type of data analyses required.

Inferential strategies. The inferential strategies used in this case study are *deductive* and *retroductive* strategies. Deduction strategies help us understand the degree to which an observed process (or pattern) *matches* the theory. Retroductive strategies help us understand how the observed process in the field setting *can be explained by* the theory of human capital transformation created in this study. Both strategies, if used iteratively, can contribute towards a more complete understanding of human capital transformation through human resource development.

Developmental forces for change. The research plan will test two developmental forces for change as identified in Poole et al, (2000). The two forces selected are 1) teleological; and 2) dialectical. These forces were deemed most relevant to the theory of human capital transformation through human resource development because:

- HRD assumes that people are goal-directed and that activities undertaken by people contribute towards development and goal accomplishment (teleology); and
- Social interactions at work can be viewed as arenas where opposing perspectives engage with each other resulting in either 1) new shared understandings; or 2) dominance of one entity over another.

These two forces of change were selected because of their ability to focus on the individual (teleological) and relational (dialectical) levels. As described earlier in this study, the focus of this research is to understand how individual human capital is transformed, in an organizational and social context, through human resource development.

During the research collection, it is anticipated that three other common sources of change may be embedded in the transformation of human capital through human resource development. These three common sources of change are age, cohort, and transient. The data eventually collected will be assessed with these three perspectives to determine whether or not (or the extent of) age, cohort, and transient influences exist. The intent of the study will be to rule out, if possible, these three sources of change.

Sample selection process. The sample selection process will focus on obtaining research collaborations with polar, or extreme, organizational forms. For example, one collaborating organization may be a factory, and another may be a high tech service firm. However, the selection process will seek homogeneity in the level of commitment to human resource development. In each case, the study seeks to collaborate with organizations that have demonstrated a *high degree of commitment* to human resource development. According to Poole et al, (2000), researchers are urged to seek organizations with a long track record of experience with the process under investigation.

In the beginning, one pilot test will be conducted with one organization in order to further define and clarify the research design. This pilot study will seek a collaborative organization, most probably of convenience to the researcher. This first pilot study will be at a minimum of nine months in duration; the preference will be for a twelve or fifteen

month project. During this time of data collection, the researcher will be continually moving back and forth between concepts, incidents, and theory. At the same time, the researcher can be establishing collaborative relationships with other types of organizations, as described above. The intention of this study is to eventually compile six to ten longitudinal studies on human capital transformation through human resource development.

Analytical methods. Two dimensions of this research design influenced the choice of analytical methods. The two dimensions are 1) the number of cases; and 2) the number of events that are observed and recorded. The analytical options for *few cases*, with *many events*, include summary case studies, phasic case studies, time series analysis, and Markov analysis (Poole and Ven de Ven, 2000).

Summary case studies can provide counts of incidents and events, which then can yield statistical analyses. Phasic analysis helps us understand the temporal relationships among individual events. Time series helps us understand the patterns that emerge from the data, from which we are able to develop temporal and probabilistic ideas. Markov analysis is a stochastic modeling technique that takes time series a step further because they are oriented towards predicting changes in probability distribution of events as a function of time. Depending on the data collection and other emergent research design issues, one or more of these analytical methods will be selected.

Data Collection Plan

For the study of *human capital transformation through human resource development*, the data collection plan will move from concrete to abstract through five steps: 1) collect raw data; 2) identify events in the data; 3) array the events in a chronicle

of the process; 4) use coding to move from data to events to chronicle; and 5) transform the information into a final form that is suitable for the analysis methods selected from above. These five steps are described below.

Collect raw data. As described in chapter four, there are five sensitizing constructs that guide the collection of data for each developmental statement. Each of the five constructs was further deconstructed into incidents, which are the lowest, or foundational, form of raw data in this study.

Identify events. The events of this study include the five constructs described in chapter four. During this study, it may be found that events have changing temporal relationships with incidents. Further, events may be temporally nested. On top of that, the incidents may indicate more than one overlapping event. Finally, events must have a defined central subject, or individual. The central subject for this study is the employee. The temporal aspects of incidents and events will be determined through the pilot study.

Array events into chronicles. According to Poole, et al (2000), "moving from raw data to incidents results in a stream of data consisting of a chronological listing of all incidents observed" (p. 149) in the developmental process. Database management programs will store the coded data and arrange them into chronicles, or event sequences. For this study, a decision will be made in the future regarding the relational database program that will be used to support this effort. The output of the database program will be multiple chronicles that will be used as the basic data for the subsequent phases of this research project.

Use coding to move from data to events to chronicle. As described earlier, a retroductive strategy will be used for the iterative process of data collection, coding, and

analysis. The five categories for each developmental statement are an example of the retroductive coding strategy: these categories are used as a synthetic tool to understand the data as it emerges. The categories emerged themselves from the conceptual development phase of the *theory of human capital transformation through human resource development.* Over time, the categories may be adjusted and/or abandoned if the findings warrant.

Key choices regarding the coding system include: 1) type of unit to be used; 2) type of coding to be made; 3) degree of independence between researchers; 4) multifunctional or univocal coding; and 5) the domain of the meanings that the categories are meant to illustrate. For this study, natural units will be used. Natural units "are those whose bounds are set in the phenomenon itself," while artificial units "are those specified by the researcher," (Poole, et al, p. 144). Depending on the incident, the coding types for this study will be 1) qualitative categories; or 2) scaled to reflect the intensity of the incident.

Like the first case study design, this design seeks to have at least two researchers throughout the duration of the study. This design will draft up a complete list of qualitative categories with full descriptions in order to encourage consistent coding between researchers. Further, the study will detail the variable, or intensity of, the incidents that are coded for intensity. Researchers will also periodically re-code each other's work and tests will be conducted to ascertain variances. If inconsistency is apparent, corrective measures will be taken.

Because of the complexity of human capital transformation through human resource development, it is necessary to permit incidents to be classified in more than one

way. This allows for one incident to take on different meanings. Therefore, multifunctional coding will be used for this case study design.

The categories can represent either observer-privileged or participant-privileged meanings. At this time, the study will create the coding system to reflect the meanings that the *researchers* (the observers) give to the phenomenon of human capital transformation. Future work may entail creating participant-privileged meaning categories.

Plan for Transforming Coded Data into Forms Suitable for Analysis

For this study, the coded data will be transformed into summary statistical data, phase maps, and continuous variables suitable for analysis. The summary statistical data will be used to test the developmental models with variance analysis. The phase maps will be used for phasic analysis. The continuous variables will be used for a time series analysis of human capital transformation through human resource development. Stochastic modeling will also be used to determine the probability structures of the developmental sequences.

Research Design Summary for Research Question #2

The preceding section has presented the research design to answer the second research question: *what are the temporal sequences of the process of human capital transformation?* The design detailed the data collection process and described the methods of analysis that will be used on the data. Further, the design incorporated strategies to increase the reliability and validity of the study in order to produce knowledge that will contribute to the discipline of human resource development. It was noted that the categories may be amended during the data collection, and an iterative

process of theory – data collection—analysis – theory may occur during this case study design.

CHAPTER SEVEN

SUMMARY AND CONCLUSIONS

The purpose of this chapter is to provide a summary of the completed study entitled "*Towards A Theory of Human Capital Transformation Through Human Resource Development.*" The chapter will begin with describing the problem and research questions, and then continue with a presentation of the research process and findings. The chapter concludes with the implications for human resource development scholars and practitioners.

Problem

Business organizations rely on the brainpower of employees. This is an immutable fact of the knowledge economy. Like a car needs gas to run, organizations need employees capable of thinking, performing, and adapting. Organizations depend on this *human capital* in order to succeed in today's economy. Due to increasing competition and changes in the employer/employee relationship, organizations know that without continual development of and investments in human capital, they run the risk of failure. Organizations know that *human capital is the primary determinant of organizational success.*

Much has been written about how to measure the value of human capital. However, less is known about *how* human capital contributes towards organizational success. *The problem is we need to know more about the process of developing and managing human capital for sustained performance.* This study sought to find answers to

that problem, and created a *theory of human capital transformation through human resource development* to explain how human capital is developed and managed for sustained performance.

How Does Human Resource Development Contribute Towards the Problem?

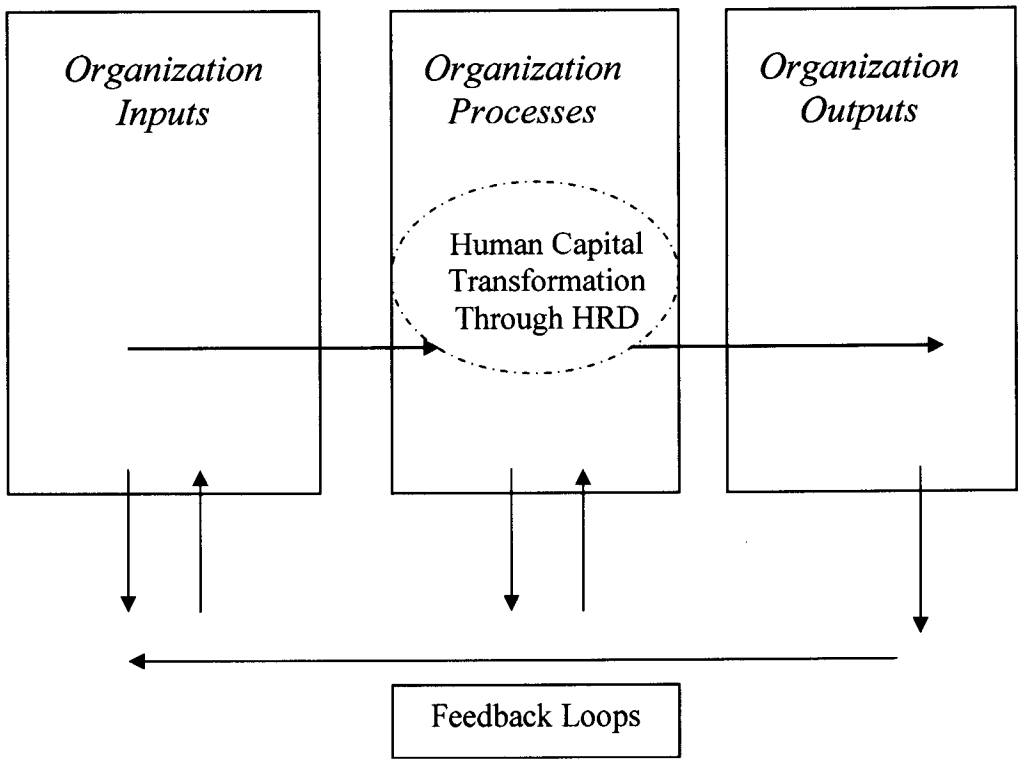
The primary purpose of human resource development (HRD) is to develop and unleash human expertise through training and development (T&D) and organization development (OD) in order to improve performance. HRD accomplishes this purpose through a variety of research-based interventions that focus on individual development (T&D) and organizational improvements (OD). These interventions are implemented, with greater or lesser success, by business organizations because the organization wants to see some type of improvement in quality, quantity, cost, etc.

However, *how* these interventions work remains unclear. How is it that training and development improves performance? We know it can—evidence suggests that training and development can positively impact the organizational bottom line. But the relationship between *learning* (through training and development) and *performance* (actual on the job actions) remain underdeveloped in the scholarly literature. This study sought to understand the relationship between *learning* and *performance*, and adopted the phrase *human capital transformation through human resource development* to describe what happens when people learn and then perform on the job.

The transformation itself is embedded in the organization processes of a typical systems model. Systems models, like Figure 7.1 below, offer an easily identifiable input-process-output diagram and are used to explain many complex organizational dynamics. For this study, the transformation of human capital into organizational output occurs in

the 'process' center of the systems model. It is in these organizational processes that the actual transformation of human capital through human resource development is seen to occur.

Figure 7.1
Human Capital Transformation as a Process Contributing to Sustained Performance



Purpose of the Study

The purpose of this study was to create a theory to explain and understand how human capital is transformed by human resource development. Human capital was identified as one of three value creation drivers embedded in organizational contexts. The other two were social capital (e.g., resources embedded in social networks) and structural capital (e.g., everything left at the office after the employee leaves). This study

adopted the perspective that HRD interventions can change the relationships between human, social, and structural capital. These changed relationships can act to transform latent human capital into activated human capital; in other words, turn learning into performance.

The Research Questions

Two research questions emerged from the literature review. The two questions were:

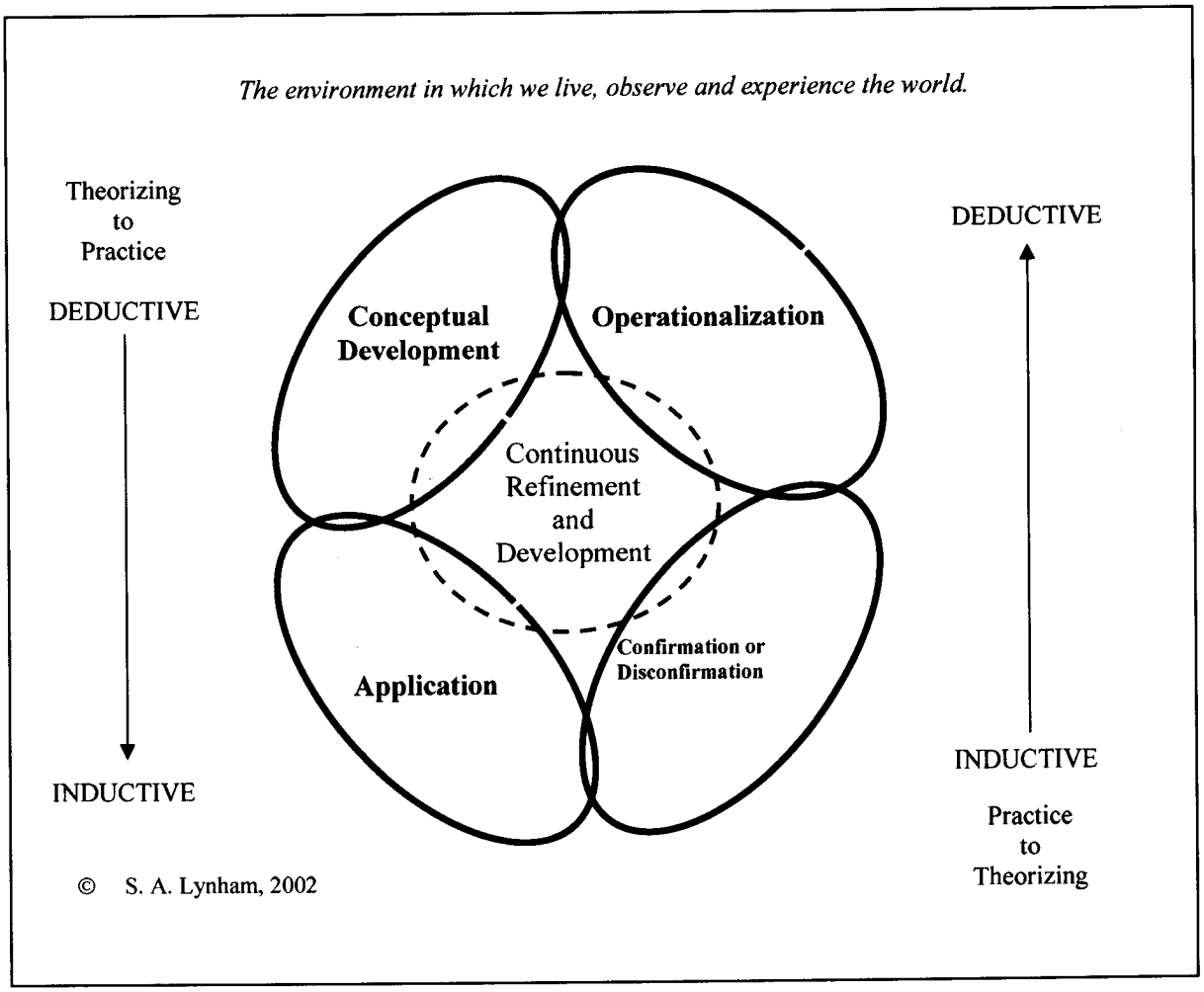
1) How does human resource development impact the relationships between human, social, and structural capital?

2) What are the temporal sequences of the process of human capital transformation?

Theory Building Research

In order to create a theory of human capital transformation through human resource development, this study conducted *theory research* in order to identify the most appropriate theory building process for the phenomenon under investigation. The theory research findings suggested that theory building is itself bigger than a dissertation; indeed, theory building according to the General Method of Theory Building Research (Lynham, 2002) is best understood as a long-term, reiterative, and multi-phased process that is conducted over a lifetime. (see figure 7.2)

Figure 7.2. The General Method of Applied Theory Building Research



As illustrated above, the General Method is a five-phased, recursive model of theory research. Theory building involves multiple studies and multiple phases, and, according to Lynham (2002), is never completely done. The General Method offers several rational exit points for concluding a specific study. For example, one study could focus exclusively on the conceptual development phase of theory research. The findings from this study would be a completed conceptual model, with propositions, of some phenomenon of interest. On the other hand, a complete study could consist of both the conceptual development *and* operationalization phases; the findings from this study

would entail the conceptual model, propositions, empirical indicators, and testable hypotheses.

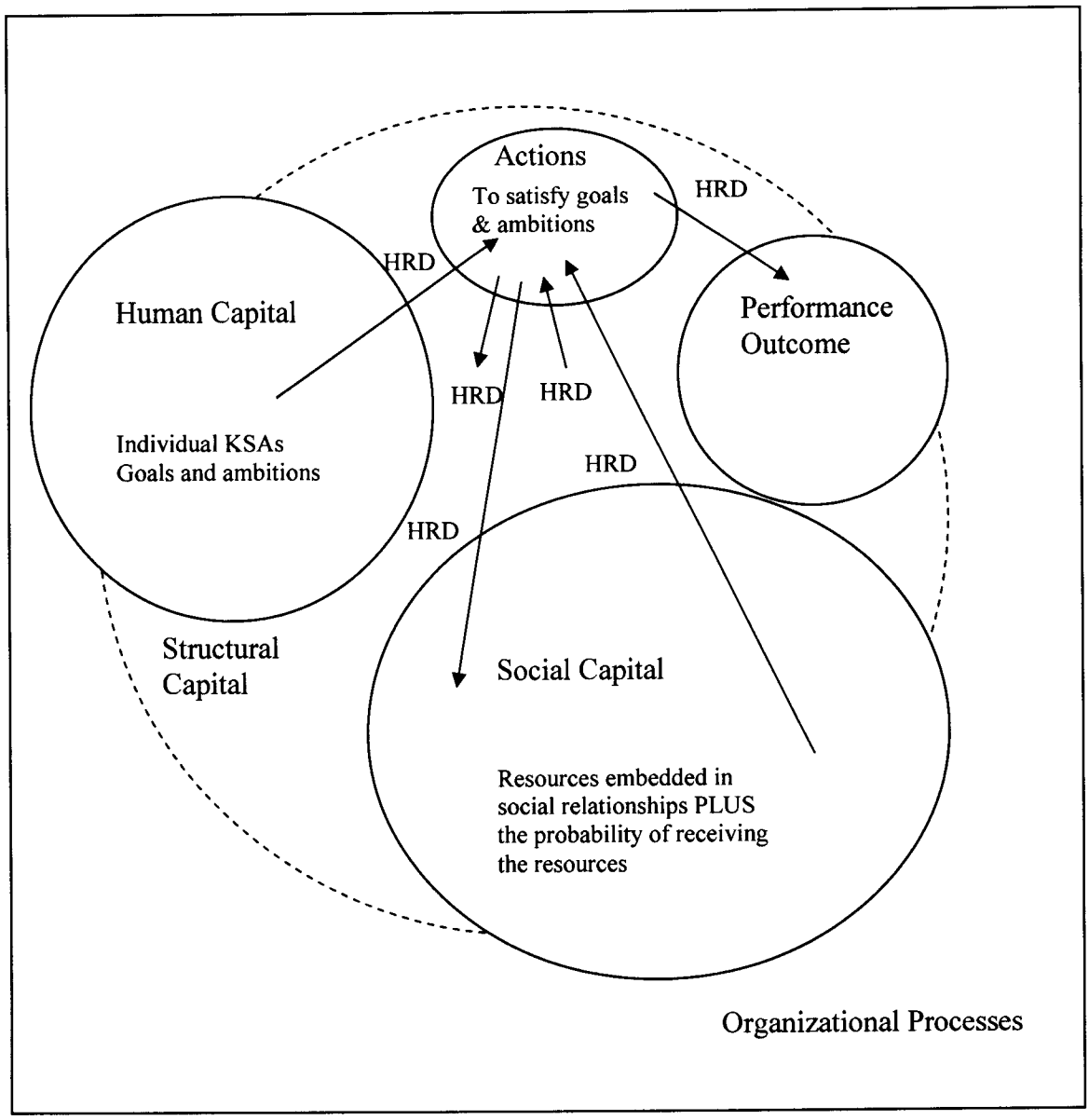
For this study, a further step was taken. This study completed half of the third phase of theory building (confirmation and disconfirmation) and produced two case study designs in order to test the theory of human capital transformation created in the conceptual development phase. A summary of the findings for each phase is described below.

Phase #1: conceptual development. The conceptual development phase produced two findings. The first finding had to do with theory research itself. This study found that there are five basic conceptual components of conceptual development that recur over and over in the theory research literature. These conceptual components are embedded in the conceptual development phase of the General Method.

The contribution of these findings is an enhancement to the General Method of Theory Building Research in Applied Disciplines (Lynham, 2002). The conceptual development phase of the General Method, prior to this study, provided criteria for completion but did not offer specific and explicit instructions for the actual process of conceptual development. This study provides the explicit instructions that were lacking in the General Method, and in so doing provides a process of conceptual development that is both comprehensive and consistent.

The second finding was a completed conceptual model, with propositions, of the phenomenon under study, namely, *human capital transformation through human resource development.* The model that was created is itself embedded within the systems model (Figure 7.1) and is viewed as a component of organization processes.

Figure 7.3: Conceptual Model of Human Capital Transformation
Through Human Resource Development



The contribution of the model is the six HRD intervention points (seen as 'HRD' next to the six arrows above) required for human capital transformation. *HRD is the only tool organizations have in order to impact the relationships between the three value*

creation drivers, and this model identified specific intervention points for the effective development and management of human capital.

Phase #2: Operationalization. The operationalization phase advanced the conceptual model into two different forms created to answer the two research questions. The two research questions were

1) How does human resource development change the relationships between human, social, and structural capital? and
2) What are the temporal sequences of the process of human capital transformation?

These questions guided the operationalization and involved creating empirical indicators and testable hypotheses for *the theory of human capital transformation through human resource development.*

Phase #3: Confirmation / Disconfirmation. The findings from this phase are two separate case study designs created to answer each research question. The case studies were carefully designed to ensure validity and reliability; detailed information about data collection and analysis was provided; and the case studies are ready to be implemented in the next phase of this long-term study. The two case studies will be executed is subsequent phases of the researcher's long-term research agenda.

Implications for Human Resource Development

Human capital transformation is at the core of what human resource development scholars and practitioners are all about. HRD is about how people work together in organizational contexts, co-creating the processes, practices, norms, standards, and environment of the organization. Embedded within these processes lie three different

types of capital, or value creation drivers: individual knowledge, skills, and attitudes (e.g., human capital); social relationships (e.g., social capital); and organizational systems (e.g., structural capital). Each of these three have the potential create value for both the organization and the individual, and knowing how they relate is critical to understanding how value is created in organizational contexts.

From this study, practitioners have an innovative, research-based model to make sense out of the relationships between these value creation drivers. The theory of human capital transformation through human resource development illuminates specific, targeted intervention points designed to improve the relationships between the three value creation drivers. Practitioners will be interested in how to best align the relationships for sustained performance, and therefore will look to these intervention points as key areas for improvement.

Scholars, and this author is one, are given multiple opportunities for future research from the model. This study designed two case study plans that, when executed, will provide new knowledge about certain relationships between the value creation drivers. Additional studies could easily be created to explore other facets of other relationships, and replication studies could further confirm or disconfirm findings. Guided by a scholarly interest to understand more about these relationships, these future research findings can contribute towards the practice of human resource development by identifying 1) effective interventions; and 2) key levers for change. Practitioners want the interventions, and scholars want to know how the intervention will cause the change.

In conclusion, this study resulted in the creation of two case study research plans to test the theory of human capital transformation through human resource development.

The theory synthesizes complex organizational dynamics into three value creation drivers: human, social, and structural capital. The theory provides a way to understand, assess, and improve the relationships between these three drivers. These improvements will result in higher performance for the individual as well as the organization.

References

Adler, P.S. & Kwon, S.W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review, 27,1*, 17-40.

Aliaga, O. (2001). *Human capital, HRD and the knowledge organization.* Paper presented at the Academy of Human Resource Development 2001 Conference Proceedings, Tulsa, OK.

Baker, W. (2000). *Achieving success through social capital: Tapping the hidden resources in your personal and business networks.* San Francisco: Jossey-Bass.

Barley, S.R. (1990). Images of imaging: Notes on doing longitudinal field work. *Organization Science, 1, 3*, 220-247.

Bartol, A.K. (1995). Training, wage growth, and job performance: Evidence from a company database. *Journal of Labor Economics, 13, 31,* 401-425.

Bartol, K. (1979). Professionalism as a predictor of organizational commitment, role stress, and turnover: A multidisciplinary approach. *Academy of Management Journal, 22, 4*, 815-837.

Bassi, L.J., Lev, B. Low, J. McCurrer, D.P., & Siesfeld, G.A. (2000). Measuring corporate investments in human capital. In Blair & Kochan (Eds) *The new relationship: Human capital in the American corporation.* Washington, D.C.: Brookings Institution.

Bassi, L.J., Ludwig, J., McMurrer, D.P., & Van Buren, M. (2002). Profiting from learning: Firm-level effects of training investments and market implications. *Singapore Management Review, 24,3*, 61-76.

Beck, J.K. (2003). Independent workforce theory: Implications for HRD. *Human Resource Development International, 6, 1*, 21-42.

Becker, B. E., Huselid, M. A., & Ulrich, D. (2001). *The HR scorecard: Linking people, strategy, and performance.* Boston: Harvard Business School Press.

Becker, G. S. (1993). *Human Capital: A theoretical and empirical analysis, with special reference to education* (3 ed.). Chicago: University of Chicago Press.

Ben-Ner, A., Burns, W.A., Dow, G., & Putterman, L. (2000). Employee ownership: An empirical exploration. In M.M. Blair & T.A. Kochan, Eds. *The new relationship: Human capital in the American corporation.* Washington, DC: Brookings Institution Press.

Blair, M. M., and Kochan, T. A. (Eds.). (2000). *The new relationship: Human capital in the American corporation.* Washington, D.C.: Brookings Institution.

Blundell, R., Dearden, L., Meghir, C., and Sianesi, B. (1999). Human capital investment: The returns from education and training to the individual, the firm, and the economy. *Fiscal Studies*, 20(1), 1-23.

Bohl, D.L., Slocum Jr., J.W. (1996). Ideas that will shape the future of management practice. *Organizational Dynamics, 25,1,* 7-14.

Bontis, N. & Nikitopoulos, D. (2002). Thought leadership on intellectual capital. In N. Bontis, Ed., *World congress on intellectual capital readings*. Woburn, MA: Butterworth Heinmann.

Bontis, N. (2002a). Managing organizational knowledge by diagnosing intellectual capital: Framing and advancing the state of the field. In N. Bontis, Ed., *World congress on intellectual capital readings*. Woburn, MA: Butterworth Heinmann.

Bontis, N. (Ed.) (2002b). *World congress on intellectual capital readings*. Woburn, MA: Butterworth Heinmann.

Bourdieu, P. (1983). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education.* Westport, CT: Greenwood Press.

Bourgeois III, L.J. (1979). Toward a method of middle-range theorizing. *Academy of Management Review, 4-3*, 443-447.

Bowman, M.J. (1963). Educational shortage and excess. *The Canadian Journal, 29,4*, p. 7-8.

Bowman, M.J. (1980). On Theodore W. Schultz's contributions to economics. *Scandinavian Journal of Economics, 1980,* 80-107.

Brandstatter, V., Heimbeck, D., Malzacher, J.T., & Frese, M. (2003). Goals need implementation intentions: The model of action phases tested in the applied setting of continuing education. *European Journal of Work and Organizational Psychology, 12,1,* 37-59.

Brass, D. J. (1981). Structural relationships, job characteristics, and worker satisfaction and performance. *Administrative Science Quarterly, 26,3*, 331-348.

Brass, D. J. (1985). Men's and women's networks: A study of interaction patterns and influence in an organization. *Academy of Management Journal, 28,2,* 327-343.

Bunker, K.A., Kram, K.E., & Ting, S. (2002). The young and the clueless. *Harvard Business Review, 80,12*, 80-87.

Burt, R. S. (1992). *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.

Burton-Jones, A. (2001). *Knowledge capitalism: Business, work, and learning in the new economy*. New York: Oxford University Press.

Burrell, G. & Morgan, G. (1979). *Sociological paradigms and organizational analysis.* Portsmouth, NH: Heinemann Publishing.

Button, S. Mathieu, J., Zajac, D. (1996). Goal orientation in organizational research: A conceptual and empirical foundation. *Organizational Behavior and Human Decision Processes, 67*, 26-48.

Chalofsky, N. (2003). An emerging construct for meaningful work. *Human Resource Development International, 6, 1*, 69-84.

Chan, D. (1996). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology, 83, 2*, 234-246.

Chan, L.K.C., Lakonishok, J. & Sougiannis, T. (2003). The stock market valuation of research and development expenditures. In J. Hand & B. Lev (Eds.) *Intangible assets: Values, measures, and risks*. Oxford: Oxford University Press.

Chiswick, B. & Mincer, J. (1974). Time-series changes in personal income equality in the United States from 1939 with projections to 1985: Reply. *Journal of Political Economy, 82,5,* 1033-1035.

Christensen, C.M. & Raynor, M.E. (2003). Why hard-nosed executives should care about management theory. *Harvard Business Review, 81,9,* 66-75.

Christensen, C.M. & Sundahl, D.M. (2001). The process of building theory. Manuscript in preparation. Accessed April 8, 2004:

http://legacy.csom.umn.edu/WWWPages/Faculty/VanDeVen/mgt8101/Christense n%20Building%20Theory.pdf

Cohen, D., and Prusak, L. (2001a). How to invest in social capital. *Harvard Business Review*, 79(5), 86-93.

Cohen, D., and Prusak, L. (2001b). *In good company: How social capital makes organizations work.* Boston: Harvard Business School Press.

Coleman, J. S. (1982). *The asymmetrical society.* Syracuse, NY: Syracuse University Press.

Coleman, J. S. (1990). *Foundations of social theory.* Boston: Harvard University Press.

Compte, A. (1848). *General view of positivism.* Stanford, CA: Academic Reprints.

Cross, R. & Israelit, S. (2000). *Strategic learning in a knowledge economy: Individual, collective, and organizational learning processes.* Boston, MN: Butterworth Heinemann.

Cross, R., Parker, A., Prusak, L, & Borgatti, S.P. (2001). Knowing what we know: Supporting knowledge creation and sharing in social networks. *Organizational Dynamics, 30,2,* 100-120.

Cummings, T. G. & Worley, C.G. (1993). *Organization development & change.* Cincinnati, OH: West Publishing Company

Dansereau, F., Yammarino, F.J., & Kohles, J.C. (1999). Multiple levels of analysis from a longitudinal perspective: Some implications for theory building. *Academy of Management Review, 24, 2,* 346-357.

Denison, E.F. (1962). How to raise the high-employment growth rate by one percentage point. *American Economic Review, 52,2,* 67-76.

Denzin, N.K. & Lincoln, Y.S. (Eds.) (2000). *Handbook of qualitative research.* 2nd Ed. Thousand Oaks, CA: Sage Publications.

Dess, G. G., and Picken, J. C. (2000). *Beyond productivity: How leading companies achieve superior performance by leveraging their human capital.* New York: AMACOM.

D'Intino, R.S., Shepard, J.M., & Wolfle, L.M. (2002). A social contract perspective on organizational citizenship behavior. Academy of Management Proceedings, 2002, p. C1 (AN 7516920).

Dooley, K. J. & Van de Ven, A. H. (1999). Explaining complex organizational dynamics. *Organization Science, 10,3*, 358-372.

Dooley, L. (2002). Case study research and theory building. . *Advances in Developing Human Resources, 4, 3*, 335-354.

Doty, D.H., & Glick, W.H. (1994). Typologies as a unique form of theory building: Toward improved understanding and modeling. *Academy of Management Review, 19,2*, 230-251.

Dubin, R. (1978). *Theory building.* New York: Free Press.

Dubin, R. (1983). Theory building in applied areas. In M. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 17-39). New York: Wiley.

Edvinsson, L., and Malone, M. S. (1997). *Intellectual capital: Realizing your company's true value by finding its hidden brainpower.* New York: HarperBusiness.

Egan, T.M. (2002). Grounded theory research and theory building. *Advances in Developing Human Resources, 4, 3*, 277-295.

Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Review, 14,4*, 532-550.

Fernandez, R. M., Castilla, E. J., and Moore, P. (2000). Social capital at work: Networks and employment at a phone center. *The American Journal of Sociology*, 105(5), 1288-1343.

Fitz-enz, J. (2000). *The ROI of human capital: Measuring the economic value of employee performance.* New York: American Management Association.

Fitz-enz, J., and Phillips, J. J. (1998). *A new vision for human resources*. Menlo Park, CA: Crisp Publications.

Flap, H. D., and Dirk De Graaf, N. (1986). Social capital and attained occupational status. *Netherlands Journal of Sociology*, 22, 145-161.

French, W.L. & Bell Jr., C.H. (1999). *Organization development: Behavioral science interventions for organization improvemen*t. Upper Saddle River, NJ: Prentice Hall.

Galunic, D.C. & Anderson, E. (2000). From security to mobility: Generalized investments in human capital and agent commitment. *Organization Science, 11,1*, 1-20.

Gant, J., Ichniowski, C., & Shaw, K. (2002). Social capital and organizational change in high-involvement and traditional work organizations. *Journal of Economics & Management Strategy, 11, 2*, 289-328.

Gargiulo, M., & Benassi, M. (2000). Trapped in your own net? Network cohesion, structural holes, and the adaptations of social capital. *Organization Science, 11,2*, 183-196.

George, J.M. & Jones, G.R. (2000). The role of time in theory and theory building. *Journal of Management, 26,4*, 657-684.

Gioia, D.A. and Pitre, E. (1990). Multiple perspectives on theory building. *Academy of Management Review*, 15, 4, 584-602.

Gozdz, K. (Ed.). (1995). *Community building: Renewing spirit and learning in business*. San Francisco: Sterling and Stone.

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, 78, 1360-1380.

Hand, J. & Lev, B. (2003). *Intangible assets: Values, measures, and risks*. New York: Oxford University Press.

Hand, J.R.M. (2003). The increasing returns-to-scale of intangibles. In J. Hand & B. Lev (Eds.) *Intangible assets: Values, measures and risks*. New York: Oxford University Press.

Heckhausen, H. & Gollwitzer, P.M. (1987). Thought contents and cognitive functioning in motivational versus volitional states of mind. *Motivation and Emotion, 11*, 101-120.

Homans, G. (1976). Fundamental processes of social exchange. In E. Hollander & R. Hunt, Eds. *Current perspectives in social psychology*. New York: Oxford University Press.

Jick, T.D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly, 24, 4*, 602-611.

Johnson, L. R. & Knoke, D. (in press). 'Skonk works here;' Activating network social capital in complex collaborations. *Advances in Interdisciplinary Studies of Work Teams.*

Kaplan, R. S., and Norton, D. P. (1996). *The balanced scorecard: Translating strategy into action*. Boston: Harvard Business School Press.

Kaplan, R. S., and Norton, D. P. (1998). The balanced scorecard--Measures that drive performance, *Harvard business review on measuring corporate performance.* Boston: Harvard Business School Publishing.

Kauffman, Jr., D.L. (1980). *Systems 1: An introduction to systems thinking.* Minneapolis, MN: S.A. Carlton.

Kirk, A.K, & Brown, D.F. (2003). Latent constructs of proximal and distal motivation predicting performance under maximum test conditions. *Journal of Applied Psychology, 88, 1.*

Klein, K.J., Dansereau, F., & Hall, R.J. (1994). Levels issues in theory development, data collection, and analysis. *The Academy of Management Review, 19, 2,* 195-229.

Klein, K.J. & Kozloswki, S.W.J., (Eds.). (2000). Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions. San Francisco: Jossey-Bass.

Kogut, B. & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science, 3,3,* 383-397.

Kogut, B. & Zander, U. (1996). What firms do? Coordination, identity, and learning. *Organization Science, 7,5,* 502-518.

Kozlowski, S.W.J. & Klein, K.J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal and emergent processes. In K.Klien & S. Kozlowski, (Eds.), Mulitlevel theory, research, and methods in organizations: Foundations, extensions, and new directions. San Francisco: Jossey-Bass.

Krackhardt, D. & Hanson, J.R. (1997). Informal networks: The company behind the chart. In L. Prusak, Ed., *Knowledge in organizations*. Boston, MA: Butterworth Heinemann.

Krempl, S.F. & Pace, R.W. (2001). *Training across multiple locations: Developing a system that works*. San Francisco: Barrett-Kohler.

Kuhn, T.S. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Lazersfeld, P.F. & Menzel, H. (1969). On the relation between individual properties. In Amitai Etzioni, (Ed.), *A Sociological Reader on Complex Organizations*. New York: Holt, Reinhart & Winston.

Lepak, D. P., and Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *The Academy of Management Review*, 24(1), 31048.

Lesser, E. & Prusak, L. (2000). Communities of practice, social capital and organizational knowledge. In E.L.Lesser, M.A. Fontaine, & J.A. Slusher, eds., *Knowledge and communities*. Boston, MA: Butterworth Heinemann.

Lesser, E. & Storck, J. (2001). Communities of practice and organizational performance. *IBM Systems Journal, 40, 4*, 831-841.

Lesser, E.L. (2000). *Knowledge and social capital: Foundations and applications*. New York: Butterworth Heinemann.

Lesser, E.L., Fontaine, M.A., & Slusher, J.A. (2000). *Knowledge and communities*. Boston, MN: Butterworth Heinemann.

Lev, B. & Sougiannis, T. (2003). The capitalization, amortization, and value-relevance of R&D. In J. Hand & B. Lev (Eds.) *Intangible assets: Values, measures and risks*. New York: Oxford University Press.

Lewis, M.W. & Grimes, A.J. (1999). Metatriangulation: Building theory from multiple paradigms. *Academy of Management Review, 24,4*, 672-690.

Liebeskind, J.P.O., Lumerman, A., Zucker, L., & Brewer, M. (1996). Social networks, learning, and flexibility: Sourcing scientific knowledge in new biotechnology firms. *Organization Science, 7,4*, 426-443.

Liebeskind, J.P. (2000). Ownership, incentives, and control in new biotechnology firms. In Blair & Kochan (Eds) *The new relationship: Human capital in the American corporation*, (299-333). Washington, D.C.: Brookings Institution

Lin, N. (2001). *Social Capital: A theory of social structure and action*. Cambridge, UK: Cambridge University Press.

Locke, E.A. & Latham, G.P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57,9*, 705-717.

Loury, G. (1977). A dynamic theory of racial income differences. In P. A. Wallace and A. LeMond (Eds.), *Women, minorities and employment*. Lexington, MA: Lexington Books.

Lynch, L. (1992). Private-sector training and the earnings of young workers. *American Economic Review, 82,1*, 299-312.

Lynch, L. & Black, S. (1998). Beyond the incidence of employer-provided training. *Industrial & Labor Relations Review, 52, 1*, 64-81.

Lynham, S. (2000). Theory building in the human resource development profession. *Human Resource Development Quarterly*, 11.

Lynham, S. (2002). The general method of applied theory building research. *Advances in Developing Human Resources*,4,3 (221-241).

Lynham, S. (2002). Quantitative research and theory building: Dubin's method. *Advances in Developing Human Resources*, 4,3, (242-276).

Lynham, S.A. (2000). Theory building in the human resource development profession. *Human Resource Development Quarterly, 11, 2,* 159-178.

Mahdjoubi, D. (2001). From grounded theory to grounded model: A review of the diamond model for professional research. Academy of Management Proceedings, Submission #32012.

Martocchio, J.J., & Hertenstein, E.J. (1999). *Learning orientation and goal orientation context: Relationships with cognitive and affective learning outcomes.* Paper presented at the 14th annual conference of the Society for Industrial and Organizational Psychology, Atlanta, GA.

Marx, K. (1845). The German ideology. In M. Eastman (Ed.), *Capital and other writings of Karl Marx*. New York: Random House.

Marx, K. (1859). Critique of political economy. In M. Eastman (Ed.), *Capital and other writings of Karl Marx*. New York: Random House.

Marx, K. (1867). Capital: The communist manifesto. In M. Eastman (Ed.), *Capital and other writings of Karl Marx* (pp. 11-301). New York: Random House.

Maskell, P. (2000). Social capital, innovation, and competitiveness. In S. Baron, J. Field, and T. Schuller, (Eds.), *Social capital: Critical perspectives*. Oxford: Oxford University Press.

Maslow, A. (1954). *Motivation and personality*. New York: Harper.

Maslow, A. (1971). *The farther reaches of human nature*. New York: Penguin.

McElroy, M.W. (2002). Social innovation capital. *Journal of Intellectual Capital, 3,1*, 30-39.

McElroy, M.W. (2003). *The new knowledge management: Complexity, learning, and sustainable innovation*. New York: Butterworth Heinemann.

McGregor, D. (1961). *The human side of enterprise*. New York: McGraw-Hill.

Mehra, A., Kilduff, M., & Brass, D.J. (2001). The social networks of high- and low- self monitors: Implications for workplace performance. *Administrative Science Quarterly, 46,1*, 121-146.

Merton, R. K. (1968). *Social theory and social structure* (3 ed.). New York: The Free Press.

Mill, J. S. (1848). Principles of political economy with some of their applications to social philosophy. In W. J. Ashley (Ed.), *Principles of Political Economy*. London: Longmans, Green and Co.

Mincer, J. & Polachek, S. (1974). Family investments in human capital: Earnings of women. *Journal of Political Economy, 82,2,* 76-109.

Mossholder, K.W. & Bedeian, A. (1983). Cross-level inference and organizational research: Perspectives on interpretation and application. *Academy of Management Review, 8, 4*, 547-558.

Nahapiet, J. & Ghoshal, S. (2002). Social capital, intellectual capital, and the organizational advantage. In C.W. Choo & N. Bontis, Eds., *The strategic management of intellectual capital and organizational knowledge.* New York: Oxford University Press.

Nakamura, L. (2003). A trillion dollars a year in intangible investment and the new economy. In J. Hand & B. Lev (Eds.) *Intangible assets: Values, measures and risks.* New York: Oxford University Press.

Nonaka, I, & Nishiguchi, T. (2001). *Knowledge emergence: Social, technical, and evolutionary dimensions of knowledge creation.* New York: Oxford University Press.

Nonaka, I. & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation.* New York: Oxford University Press.

Nonaka, I. (1997). A new organizational structure. In L. Prusak, Ed., *Knowledge Organizations.* Boston, MA: Butterworth Heinemann.

Nooteboom, B. (2000). *Learning and innovation in organizations and economies.* New York: Oxford University Press.

O'Connor, M.A. (2000). Comment on measuring corporate investments in human capital. In M.M. Blair and T.A. Kochan, Eds., *The new relationship: Human capital in the American corporation.* Washington, D.C.: Brookings Institution Press.

Orlikowski, W.J. & Yates, J. (2002). It's about time: Temporal structuring in organizations. *Organization Science, 13, 6*, 684-700.

Osigweh, C.A.B. (1989). Concept fallibility in organization science. *Academy of Management Review, 14,4*, 579-594.

Patterson, C.H. (1986). Theories of counseling and psychotherapy. San Francisco: Harper Row.

Pentland, B.T. (1999). Building process theory with narrative: From description to explanation. *Academy of Management Review, 24,4,* 711-724.

Peterson, M.F. (1998). Embedded organizational events: The units of process in organization science. *Organization Science, 9,1*, 16-33.

Poell, R.F. & Van der Krogt, F.J. (2003). *Learning at the workplace reviewed: Theory confronted with empirical research.* Manuscript in preparation.

Poell, R.F., Van der Krogt, F.J., & Wildemeersch, D.A. (2001). Constructing a research methodology to develop models for work-related learning: Social science in action. *Qualitative Studies in Education, 14,1.* 55-70.

Polach, J. (2003). HRD's role in work-life integration issues: Moving the workforce to a change in mindset. *Human Resource Development International, 6, 1*, 57-68.

Polyani, M. (1997). Tacit knowledge. In L. Prusak, Ed., *Knowledge organizations.* Boston, MA: Butterworth Heinemann.

Poole, M.S. & van de Ven, A.H. (1989). Using paradox to build management and organization theories. *Academy of Management Review, 14,4*, 562-578.

Poole, M.S., Ven de ven, A.H., Dooley, K, & Holmes, M.E. (2000). *Organizational change and innovation processes: Theory and methods for research*. NY, NY: Oxford University Press.

Porter, M.E. (1979). *How competitive forces shape strategy*. Harvard Business Review, 57, 2.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24*, 1-24.

Potosky, D. & Ramakrishna, H.V. (2002). The moderating role of updating climate perceptions in the relationship between goal orientation, self-efficacy, and job performance. *Human Performance, 15, 3,* 275-297.

Preston, L. (2001). Sustainability at Hewlett-Packart: From theory to practice. *California Management Review, 43, 3,* 26-37.

Provo, J.M. (2000). Utilizing a human capital framework to develop an organizational capabilities strategy. Dissertations Abstracts International, A 61 (01), p. 58. (UMI No. AAT 9957674).

Prusak, L. (1996). The knowledge advantage. *Strategy & Leadership, 24,2.*

Prusak, L. (1997). *Knowledge organizations*. Boston, MA:Butterworth Heinemann.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community.* New York: Simon and Schuster.

Reagans, R. & Zuckerman, E.W. (2001). Networks, diversity, and productivity: The social capital of corporate R&D teams. *Organization Science, 12,4*, 502-517.

Roberts, K.H., O'Reilly 111, C.A. (1979). Some correlations of communication roles in organizations. *Academy of Management Journal, 22,1,* 42-57.

Rogers, C. (1961). *On becoming a person.* Boston: Houghton Mifflin.

Romer, P. (2003). The soft revolution: Achieving growth by managing intangibles. In J. Hand & B. Lev (Eds.) *Intangible assets: Values, measures and risks.* New York: Oxford University Press.

Rothwell, W.J., Sullivan, R., & McLean, G.N. (1995). *Practicing organization development: A guide for consultants.* San Francisco: Jossey Bass Pfeiffer.

Rousseau, D.M. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. *Research in organizational behavior, 7, 1-37.* JAI Press, Inc.

Ryan, G.W. & Bernard, H.R. (2000). Data management and analysis methods. In N.K. Denzin & Y.S. Lincoln, (Eds.), *Handbook of qualitative research.* 2nd Ed., 769-802.

Schnake, M.E. & Dumler, M.P. (2003). Levels of measurement and analysis issues in organizational citizenship behavior research. *Journal of Occupational and Organizational Psychology, 76,* 283-301.

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review,* LI(1), 1-17.

Senge, P. (1990). *The fifth discipline.* New York: Doubleday.

Shapiro, C. & Varian, H.R. (2003). The information economy. In J. Hand & B. Lev (Eds.) *Intangible assets: Values, measures and risks.* New York: Oxford University Press.

Smith, A. (1776). An inquiry into the nature and causes of the wealth of nations. In E. Cannan (Ed.), *The wealth of nations.* New York: Random House.

Smith, C.A., Organ, D.W., Near, J.P. (1983). Organizational citizenship behavior: Its nature and antecedents. Journal of Applied Psychology, 68,4, 653-663.

Stake, R.E. (1995). *The art of case study research.* Thousand Oaks, CA: Sage Publications.

Storberg, J. (2002). The evolution of capital theory: A review of a theory of social capital and implications for HRD. *Human Resource Development Review, 1,4,* 468-499.

Storberg-Walker, J. (2003). Comparison of the Dubin, Lynham, and Van de Ven theory building research methods and implications for HRD. *Human Resource Development Review, 2,2,* 211-222.

Strauss, C. & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage Publications.

Swanson, R., & Holton III, E. (1997). *Human resource development: Research handbook.* San Francisco: Berrett-Koehler Publishers, Inc.

Swanson, R., & Holton III, E. (1999). *Results: How to assess performance, learning, and perceptions in organizations.* San Francisco: Berrett Koehler.

Swanson, R., and Holton III, E. (2001). *Foundations of human resource development.* San Francisco: Berrett-Koehler Publishers, Inc.

Tajfel, H. & Turner, J. (1985). The social identity theory of Intergroup behavior. In S. Worched & W. Austin, Eds., *Psychology of intergroup relations.* Chicago: Nelson-Hall.

Torraco, R. (1997). Theory-building research methods. In R.A. Swanson & E.F. Holton III, (Eds), *Human Resource Development Handbook: Linking Research and Practice* (pp. 114-137). San Francisco: Berrett-Koehler Publishers, Inc.

Torraco, R.J. (1997). Theory-building research methods. In R.A. Swanson & E.F. Holton III (Eds.), *Human resource development handbook: Linking research and practice,* 114-137. San Francisco: Barrett-Koehler.

Torraco, R.J. (2002). Research methods for theory building in applied disciplines: A comparative analysis. *Advances in Developing Human Resources, 4, 3*, 355-376.

Tovstiga, G. & Birchall, D.W. (2002). Strategic knowledge sourcing, integration, and assimilation: A capabilities-portfolio perspective. In N. Bontis, Ed., *World congress on intellectual capital readings*. Woburn, MN: Butterworth Heinmann.

Tsai, W. & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal, 41,4*, 464-476.

Turnbull, S. (2002). Social construction research and theory building. . *Advances in Developing Human Resources, 4, 3*, 317-334.

Van de Ven, A.H. (1989). Nothing is quite so practical as good theory. *Academy of Management Review, 14,4*, 486-489.

Van de Ven, A. H. (2003). Theory building and research design. Retrieved April 27, 2003, from the University of Minnesota, Carlson School of Management Web site: Http://legacy.csom.umn.edu/WWWPages/Faculty/VanDeVen/mgt8101/

Van de Ven, A.H. & Poole, M.S. (2002). Field research methods. In J.A.C. Baum (Ed.) *Companion to organizations*. Oxford: Blackwell Publishers Ltd.

Van de Ven, A.H. (in press). *Professional science for a professional school.* Thousand Oaks, CA: Sage Publications. Accessed April 8, 2004: http://legacy.csom.umn.edu/WWWPages/Faculty/VanDeVen/mgt8101/mgt8101.htm

Van de Ven, A.H., Polley, D.E., Garud, R. & Venkataraman, S. (1999). *The innovation journey.* New York: Oxford University Press.

Van de Ven, A.H., & Poole, M.S.. (1990). Methods for studying innovation development in the Minnesota innovation research program. *Organization Science, 1,3,* 313-335.

Van de Ven, A.H., & Polley, D. (1992). Learning while innovating. *Organization Science, 3,1,* 32-56.

Van Vijfeijken, H., Kleingeld, A., van Tuijl, H., Algera, J.A., & Thierry, H. (2002). Task complexity and task, goal, and reward interdependence in group performance management: A prescriptive model. *European Journal of Work and Organizational Psychology, 11,3,* 363-383.

Von Bertalnaffy, L. (1968). *General systems theory: Foundations, development, applications.* New York: Braziller.

Wacquant, L. D. (1989). Toward a reflexive sociology: A workshop with Pierre Bourdieu. *Sociological Theory,* 7, 26-63.

Walker, G., Kogut, B, & Shan, W. (1997). Social capital, structural holes and the formation of an industry network. *Organization Science, 8,2,* 109-125.

Weaver, G.R. & Gioia, D.A. (1994). Paradigms lost: Incomensurability vs. structurationist inquiry. Organization Studies, 15, 565-590.

Weick, K.E. (1989). Theory construction as disciplined imagination. *Academy of Management Review, 14,4,* 516-531.

Weick, K.E. (1995). What theory is not, theorizing is. *Administrative Science Quarterly, 40,* 385-390.

Weick, K.E. (1999). Theory construction as disciplined reflexivity: Tradeoffs in the 1990s. *Academy of Management Review, 24-4,* 797-806.

Weick, K.E. (2001). *Making sense of the organization.* Malden, MA: Blackwell Publishers Inc.

Whetten, D.A. (1989). What constitutes a theoretical contribution? *Academy of Management Review, 14, 4,* 490-495.

Whetten, D.A. (2002). Modeling-as-theorizing: A methodology for theory development. In D. Partington, (Ed.), *Essential skills for management research.* Thousand Oaks, CA: Sage Publications.

Winston, G.C. (1999). Subsidies, hierarchy and peers: The awkward economics of higher education. *Journal of Economic Perspectives, 13,1,* 13-36.

Wood, R.E. (1986). Task complexity: Definition of the construct. *Organizational Behavior and Human Decision Processes, 37,* 60-82.

Yang, B. (2002). Meta-analysis research and theory building. *Advances in Developing Human Resources, 4, 3,* 296-316.

Yang, B. (2003). Toward a holistic theory of knowledge and adult learning. *Human Resource Development Review, 2, 2,* 106-129.

Yang, B. (2004). Holistic learning theory and implications for human resource development. *Advances in Developing Human Resources, 6, 2,* 241-262.

Yin, R.K. (1994). *Case study research: Design and methods*. 2nd Ed. Thousand Oaks, CA: Sage Publications.

Zaheer, S., Albert, S., & Zaheer, A. (1999). Time scales and organizational theory. *Academy of Management Review, 24,4*, 725-741.

Zucker, L.G., Darby, M.R., & Brewer, M.B. (2003). Intellectual human capital and the birth of US biotechnology enterprises. In J. Hand and B. Lev (Eds.) *Intangible assets: Values, measures, and risks*. Oxford: Oxford University Press.