SCENARIO PLANNING AS THE DEVELOPMENT OF LEADERSHIP CAPABILITY AND CAPACITY; AND VIRTUAL HUMAN RESOURCE DEVELOPMENT

A Dissertation

by

ROCHELL RAE MCWHORTER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2011

Major Subject: Educational Human Resource Development

Scenario Planning as the Development of Leadership Capability and Capacity; and

Virtual Human Resource Development

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Approved by:

Co-Chairs of Committee,	Susan A. Lynham
	Fredrick M. Nafukho
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ABSTRACT

Scenario Planning as the Development of Leadership Capability and Capacity;

and Virtual Human Resource Development.

(August 2011)

Rochell Rae McWhorter, B. S.; M. Ed., The University of Texas at Tyler

Co-Chairs of Advisory Committee: Dr. Susan A. Lynham
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This dissertation explored the perceived association between scenario planning and the development of leadership capability and capacity. Furthermore, this study explored sophisticated virtual environments seeking instances of adult learning and the conduciveness of these environments for innovative developmental activities to build leadership capability and capacity.

Data sources included 1) fifty semi-structured interviews with five expert-practitioners purposively selected for their experience in both scenario planning and leadership development, 2) descriptive process and outcome data from scenario planning programs in university business schools, and 3) fifteen published scenario planning reports, 4) observations of the scenario planning process, and 5) a survey of forty-five individuals who participated in the study of sophisticated virtual environments.

The first stream of inquiry that investigated the perceived association between scenario planning and the development of leadership capability and capacity revealed the development of a *synthesis model* integrated from three informing theoretical

frameworks. The *model* was used for subsequent data collection, analysis, and organization. Each data source supported and further described the associative relationship between scenario planning and the development of leadership capability and capacity; leading to increased confidence in the *synthesis model*. This study is unique because it links scenario planning *explicitly* through empirical evidence with the development of leadership capability and capacity.

Findings from the second stream of inquiry into sophisticated virtual environments included formal and informal learning in the 3D virtual world of Second Life™ (SL). Respondents in the study completed forty-five open-ended surveys and follow-up interviews that revealed six enablers of adult learning in SL: 1) *a variety of educational topics for life-long learning;* 2) *opportunities for multidisciplinary collaboration*; 3) *collaboration across geographical boundaries*; 4) *immersive environment creates social;* 5) *health and emotional benefits*; and, 6) *cost savings over face-to-face experiences*. Four barriers included: *glitches in technology reduced effectiveness, addictiveness of SL, learning curve for "newbies"* and *funding issues for small businesses and nonprofits*. Also, sophisticated technologies are creating media-rich environments found to be integrative spaces conducive for developmental activities in the field of human resource development (HRD). Scenario planning and leadership development were found to be reasonable developmental activities suited to these digital spaces. *Virtual human resource development* (VHRD) was identified as a new area of inquiry for HRD.

DEDICATION

To my wonderful family, friends, colleagues and mentors who have greatly influenced, supported, and guided me throughout my lifetime and in this scholarly endeavor.

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I would like to thank my committee Co-Chair, Dr. Susan Lynham, for her constant wisdom and support throughout my learning of the inquiry process. She has been my teacher, my mentor, my teammate, and my friend. Under her tutelage, I have learned many lessons of scholarship, integrity, and collegiality.

I also want to extend my gratitude to my Co-Chair, Dr. Fred Nafukho, for his generosity of time and thoughtful comments and encouragement, and other committee members, Dr. Yvonna Lincoln and Dr. Connie Fournie,r for their guidance and support throughout the course of this research. Also, I appreciate the fifty participants, five purposively selected expert-practitioners of both scenario planning and leadership development and forty-five purposively selected residents of the 3D virtual world of Second Life, who participated in this study by sharing their lived experiences with me.

Thanks also to various research teammates including Dr. Tom Chermack, Professor Louis van der Merwe, Ms. Dorothy "Beth" Porter, Ms. Donna Mancuso, Dr. Andrew Hurt, Dr. Elaine Demps, Dr. Dominique Chlup, and Dr. Elisabeth Bennett. Much gratitude to Texas A&M University faculty: Dr. Jim Snell, Mrs. Cindy Raisor, Dr. Robert McGeachin, Dr. Terry Creasy and Dr. Wendy Keeney-Kennicutt, for including me in the development of a virtual campus connecting distance students to the university. Thanks for teaching me the Aggie traditions and making my time in graduate school at a distance a great experience.

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Daniels, Dr. Sheryl Penn, Dr. Karen Raney, Dr. Brenda Gilliam, Dr. Scott Lloyd, Dr. Clayton Allen, Dr. Rita Dobbs, Dr. Andrea Ellinger, Dr. Paul Roberts and Dr. Jerry Gilley.

Finally, I express my utmost gratitude to my mother, father, sister, darling daughter, and many other family members and friends for their prayers, encouragement, patience and love.

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CHAPTER I

INTRODUCTION

The purpose of this dissertation is to present, in manuscript format, four articles resulting from research efforts along two streams of inquiry: 1) scenario planning as the development of leadership capability and capacity, and 2) the exploration of virtual environments for development activities. I present the following pieces: 1) an empirical study examining the perceived association between scenario planning and the development of leadership capability and capacity; 2) an empirical study extending the first article and providing further evidence of scenario planning as the development of leadership capability and capacity, as well as prompting the initial conceptual development of a new construct, *scenario-based leadership*; 3) a conceptual article exploring the impact of sophisticated technologies in the field of human resource development (HRD) with identification of a new area of inquiry, *virtual HRD* (VHRD); and, 4) an empirical study of adult learning in a three-dimensional (3D) virtual world documenting instances of adult learning and its conduciveness for developmental processes with implications for VHRD.

Impetus for Manuscripts

The contemporary business environment includes many challenges such as economic recession, political uncertainty, and increasing sophisticated technologies all requiring leadership to keep up with current demands (Avolio, 2011; Lynham, 2000a; Lynham & Chermack, 2006; Nafukho, 2009; Short, 2010; Wheeler, McFarland &

This dissertation follows the style of *Advances in Developing Human Resources*.

Kleiner, 2007; Uhl-Bien, Marion, & McKelvey, 2007; Swanson & Holton, 2009; Yukl, 2010). Such challenges necessitate an increase in leadership competencies and new ways to craft strategy (Ardichvili & Mandersheid, 2008; Fahey, 2003).

These contemporary business challenges were in the forefront of the minds of several scholars as I joined their research team in 2006 to investigate the perceived association between *scenario planning* and the *development of leadership capability and capacity. Scenario planning* is a strategic planning and learning tool used by many leading firms such as Shell, Google, Apple, IBM and General Electric (Chermack, 2011; Chermack & Lynham, 2002, 2004; Chermack & Swanson, 2008; Fahey, 2003; Hartung, 2011), while the *development of leadership capability and capacity* refers to the efforts to increase the competencies and demands of organizational members to participate in leadership roles and processes (See Day, 2001; Lambert, 1998, 2005). Although both *scenario planning* and the *development of leadership capability and capacity* have been considered strategic initiatives for improving organizational performance (Center for Creative Leadership, 2008; de Geus, 1997; Lynham, 2000a; Senge, 1990; van der Heijden 2005; Wack, 1985a, 1985b) they have been pursued as separate (and usually quite costly) endeavors (McWhorter, Porter, Lynham & Chermack, 2007; McWhorter, Porter, Lynham, Chermack & van der Merwe, 2007).

If organizations could engage in scenario planning and the development of leadership capability and capacity concomitantly (rather than independently), our team reasoned that organizations could leverage these developmental activities for strategic advantage. As a result of two exploratory studies completed in 2007, findings included

an associative nature between the two constructs and development of an *integrated heuristic* to begin describing the association and gathering evidence for making the association explicit. The data and findings were compelling enough from these two preliminary studies to warrant further study thus providing the impetus for continued investigation.

In addition, a preliminary study into sophisticated technologies for developing human expertise I completed with a separate research team in 2008 led to identification of a new area of inquiry in the field of HRD. As we examined instances of adult learning in contemporary virtual environments, the research team termed the phenomenon as *virtual human resource development* (VHRD) referring to *the process of utilizing technologically integrative environments for increasing learning capacity and optimizing individual, group, community, work process, and organizational system performance* (Chalofsky, 1992, 2010; McWhorter, 2010; McWhorter, Mancuso & Hurt, 2008; Swanson & Holton, 2009). The identification of VHRD as a construct provided the impetus for two subsequent articles described further in this chapter.

Team Approach for Conducting Inquiry and Dissemination of Findings

Three of the four articles in this journal format dissertation (comprising Chapters II, III, and V) utilize a team approach. According to Lincoln and Guba (1985), when researchers conduct a qualitative inquiry, "the advantages of using teams are so overwhelming that teams ought to be used" (p. 237). They listed the advantages of using a collaborative research team as: 1) teams can accommodate multiple roles (i.e. data collection, data analysis, reporting and auditing), 2) teams can represent a variety of

value perspectives, 3) teams can represent multiple disciplines, 4) teams can pursue multiple strategies, 5) teams can reflect both substantive and methodological expertise, 6) teams can provide for internal checks on rigor, and 7) teams can provide mutual support in highly ambiguous and anxiety-producing context (p. 237).

For this dissertation, I was the sole author of one manuscript (Chapter IV) and assumed the lead researcher and primary authorship roles on the three remaining manuscripts (Chapters II, III and V) as required by my university and dissertation committee. These leading roles included the primary development and design of the research inquiry, primary collection of data and analysis (solely interviewing 45 of the 50 participants in the study; the remaining five interviews with teammates were conducted with myself as lead interviewer on four of those five interviews), primary writing of the manuscripts, and primary lead on dissemination of the inquiry findings through professional conferences and publication venues. The team approach is an accepted procedure through my doctoral program (see Texas A&M University, 2010) with initial approval obtained from my dissertation committee during the dissertation proposal defense process.

Researchers in this study were chosen for the first research team investigating scenario planning as the development of leadership capability and capacity (Chapters II and III) due to their interest and expertise in the research topic and/or methodology. I was a graduate student researcher interested in pursuing the inquiry and was previously trained in advanced qualitative methods; also, I had been a participant-observer on three separate scenario planning events (two nonprofit, one for-profit). Susan A. Lynham was

a researcher of both scenario planning and leadership development including authoring a theory of responsible leadership for performance (Lynham, 2000a). Furthermore, her extensive experience with advanced qualitative inquiry methodology (Lincoln & Lynham, 2011), scenario planning (Chermack & Lynham, 2002, 2004; Provo, Ruona, Lynham & Miller, 1998), and theory building in applied disciplines (Lynham, 2002) enhanced the team processes and outcomes. Thomas J. Chermack had written a plethora of articles on scenario planning (Chermack, 2003a, 2003b, 2003c; Chermack & Swanson, 2008; Chermack & Walton, 2006) including the development of a theory of scenario planning (Chermack, 2003b, 2007) and author of *Scenario Planning in Organizations* (Chermack, 2011). The fourth member of the research team selected was Louis van der Merwe, a scenario planning and leadership development scholar and expert practitioner (Van der Merwe, 2008), who authored the Scenario Impact Questionnaire (SIQ) used in this inquiry (Van der Merwe, 1999).

Members of the second research team utilized in this study to investigate sophisticated virtual environments for the study of VHRD were chosen due to their interest and expertise in the research topic and/or methodology undertaken. I was a graduate student researcher with four years' experience in the 3D virtual world of Second Life™ , video conferencing, and had received training in advanced qualitative research methods. Dominique Chlup was an Adult Educator with extensive knowledge of adult learning theory and practice as well as training in advanced qualitative methods. Donna Mancuso, a graduate teaching assistant in adult learning, had experience and knowledge of both virtual environments and qualitative research methods.

Richer Data through Semi-Structured Interviews

Semi-structured interviews are those conversations between researcher and participant where one or more questions are predetermined but the methodology allows the interviewer to probe deeper into participant responses or ask follow-up questions not developed *a priori* (ahead of time) during the interview session (See Lincoln & Guba, 1985). A total of 50 semi-structured interviews were conducted across the three empirical pieces presented herein. Five of the interviews were conducted with expert-practitioners (residing on three continents) who were experienced in both scenario planning and leadership development. The researcher(s) sought to capture the "lived experiences" (Lincoln, 2005, p. 221) of the expert practitioners by asking how they perceived the association between scenario planning and the development of leadership capability and capacity; oftentimes, these expert-practitioners gave anecdotal experiences and quoted relevant leadership and scenario planning literature as they responded to further probing—offering a deeper understanding of the phenomenon under investigation. It is noted that Appendix B contains a synopsis of a case study that synthesized semi-structured interviews with participants in a scenario planning activity within a corporate setting.

The remaining forty-five interviews were conducted entirely within the online 3D virtual world of Second Life™. Through the semi-structured interviewing process, the "lived experiences" of *residents* (users) in the virtual world were documented as they offered instances of adult learning (and often contrasting Second Life™ with other online platforms they had experienced). As the residents described their formal and

informal learning experiences, they gave enablers and barriers to adult learning within that media-rich, immersive environment which enabled study into the construct of VHRD.

Overview of the Dissertation

This study is organized into six chapters and follows the guidelines of the *Publication Manual of the American Psychological Association, Sixth Edition*. This introduction is Chapter I of the study and outlines the content that follows (with Chapters II-V fashioned as manuscripts for scholarly publication). Chapter VI presents an overall summary and conclusion followed by two Appendices.

Chapter II is an empirical study examining the association between scenario planning and the development of leadership capability and capacity. Data were collected from two semi-structured interviews with scholar-practitioners with expertise in both scenario planning and leadership development. In addition, university business school programs with a scenario planning component, published scenario planning reports, and related literatures were investigated. Four sets of findings are reported suggesting that the development of leadership capability and capacity are reasonable expected outcomes of scenario planning activities. One of the findings included the development of a *synthesis model* for gathering, organizing and analyzing data in subsequent studies. The final, definitive version of this paper was published in *Advances in Developing Human Resources, 10*(2), May 2008.

Chapter III is an empirical inquiry that extends the results of the study in Chapter II and also highlights the emergence of a new construct named *scenario-based*

leadership cumulating from four rounds of inquiry. In the fourth round, data were collected from five semi-structured interviews with expert-practitioners in both scenario planning and leadership development; secondary data gathered included five published reports from scenario planning activities and relevant scenario planning and leadership development literature. This article is currently under final revision and will be submitted to the *Human Resource Development International (HRDI)* journal during July, 2011.

Chapter IV is a single-authored conceptual article that explores the impact of technology in the field of HRD and how sophisticated technologies have changed the processes in the field. Through an examination of relevant literature on sophisticated technologies and a sampling of technology usage within the Academy of Human Resource Development (AHRD), a new construct for inquiry was identified as *virtual human resource development* (VHRD) (See also McWhorter, Mancuso & Hurt, 2008). This article serves as an introduction to a special Issue of *Advances in Developing Human Resources* journal I both proposed and primarily edited. The final, definitive version of this paper was published in *Advances in Developing Human Resources*, *12*(6), December 2010.

Chapter V is an empirical article examining adult learning in a virtual world. Through the collection of forty-five online surveys and follow-up interviews with *residents* (purposively selected for their longevity in the online environment and who communicated through an *avatar*—a graphical representation of a computer user representing himself/herself with capabilities of both text and voice chat with others—

see Chapman & Stone, 2010) in the 3D virtual world of Second Life™, instances of adult learning were garnered and VHRD explored. In addition, barriers and enablers to adult learning in virtual environments from participant perspectives were categorized and discussed in light of adult learning literature. One implication of the research included the nature of the virtual world itself. Because the virtual world was found to be media rich and immersive, this contemporary environment was examined for its potential for developing human expertise (with events such as scenario planning and the development of leadership capability and capacity) and found to be conducive for these activities within the virtual world environment. The final, definitive version of this paper was published in *Advances in Developing Human Resources*, *12*(6), December 2010.

Chapter VI discusses the broader implications for the three empirical studies and the conceptual piece presented in Chapters II-V and is followed by two appendices. In addition, it introduces likely salient components of a *virtual skill set* as well as presents *virtual scenario planning as the development of leadership capability and capacity*, an emergent concept where the two streams of research in this study may coalesce.

Appendix A is a theory building article for scenario planning from a social constructivist perspective which utilizes the units of data from the studies in Chapter II and III and Appendix B and was published in the *Conference Proceedings of The Academy of Human Resource Development, 2011* and is currently under development as a journal article. Appendix B is an extended synopsis of a qualitative case study that examined data collected from a scenario planning activity within a corporate setting and

was published in the *Conference Proceedings of The Academy of Human Resource Development, 2010*. Data were collected through semi structured interviews (I interviewed five of the participants and the sixth with a research teammate), related and relevant literatures, and extant data from the organization. This case study is currently in the process of development for submission to a refereed journal (Target Journal: *Futures*; Target Submission Date: September 1, 2011).

CHAPTER II

SCENARIO PLANNING AS DEVELOPING LEADERSHIP CAPABILITY AND CAPACITY*

Synopsis

Documented scenario planning projects report a diverse cross section of organizational members. Yet most projects involve executive and senior management teams as their primary participants. Given the participation of higher-level organizational members, a question arises as to whether the scenario planning process is useful in developing leadership capability and capacity within an organization. The implied link between scenario planning and the development of leadership capability must first be described, understood, and substantiated before it can be assumed to be of strategic utility to organizations and fields of practice. This article presents the outcomes of an exploratory inquiry into the association between scenario planning and leadership development. Initial discoveries suggest that the development of leadership capability and capacity are reasonable expected outcomes of scenario planning and tentatively positions scenario planning as a strategic tool in human resource development.

Introduction and Purpose

Central to emerging new-age organizations is "a deep sense of vision, or purposefulness . . . alignment around that vision . . . a persistent focus on systematic

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organizational design . . . and the balance of reason and intuition" (Senge, 1990, p. 111). The changing nature of the business environment since the 1980s has been underscored by a slew of articles calling for the need to rethink strategy and strategic planning (see, e.g., Amara & Lipinski, 1983; Ansoff, 1988; Argyris, 1985; Astley, 1984; Barnes, 1984; Beck, 1982; Buller, 1988; Chaffee, 1985; Cope, 1988; Friend & Hickling, 1987; Ginsberg, 1988; Godet, 1987; Hatten & Hatten, 1988; Keifer & Senge, 1982; King, 1983; Mason & Mitroff, 1981; Miller, 1986; Mintzberg, 1987a, 1987b, 1987c; Ohmae, 1988; Porter, 1987; Rosenberg & Schewe, 1985; Schwartz & Davis, 1981; Sergev, 1987; Stonich, 1984; Stubbart, 1989; Swanson, 1996; Wack, 1985a, 1985b). In particular, see those by Amara and Lipinski (1983) and Beck (1982). Wack (1985a, 1985b) stressed the need for scenario-informed strategic planning as a better way to deal with an increasingly uncertain and unpredictable business environment. He proposed a way to imagine, visit, and learn about plausible future environments. The purpose was to respond to these environments faster and with an increased chance of survival and sustainability. Wack was a protégé of Hermann Kahn, a renowned U.S. strategist and futurist who, in an attempt to get the Pentagon to think about global thermonuclear war, developed a methodology in the mid-1960s to "think the unthinkable" (Kahn, 1984, p. 17). The resulting methodology later evolved into scenario planning by Wack and Newland, through their strategic roles at Royal Dutch Shell during the 1970s (Kleiner, 2003). This new approach to thinking about the future was attributed as the determining factor in the company's ability to "absorb what was going on in the environment and to act on that information with appropriate business moves" (De Geus, 1988, p. 70) and,

thus, survive the unprecedented economic shakedown of the oil industry in the mid to late 1970s.

Shortly after Wack's cautions, Mintzberg (1987a) brought attention to the need for management to be able to both plan and craft strategy. This new planning expertise required management to not only analyze strategy but also to sense it. Such ideas represented radically new perspectives on strategy at the time, a process until then typically reserved for expert planners and based primarily on the assumption that the future was best predicted from a projection of the past. A year later, De Geus (1988) coined the now well-known phrase, "the ability to learn faster than your competitors may be the only sustainable competitive advantage" (p. 71), emphasizing learning as a necessary essence of planning, and "corporate planning as institutional learning" (p.70).

These two streams of thought—the first on the fundamentally changing nature of the environment and the second on the need to learn our way into the future in previously unthinkable ways—emerged in the 1980s and set in place a bedrock for rethinking organizations as institutions of continuous and double-looped learning (Argyris, 1991; Argyris & Schön, 1974). These ideas further repositioned strategy as planning processes embedded in the institutional and individual ability to learn and to do so faster than one's competitors (De Geus, 1997; Mintzberg, 1994). The continuing stream of thought and action in this realm establishes the central question of this article focused on scenario planning as the development of leadership capability and capacity.

This interdisciplinary work informed planning and related practices, some of which extended to and influenced the work of professionals concerned with the

development of human resources (see, e.g., Chermack & Swanson, 2008; Provo, Ruona, Lynham, & Miller, 1998; Swanson, Lynham, Ruona, & Provo, 1998). Even more specifically, individual, process, and organizational learning as essential process outcomes to strategic human resource development (HRD) thought and practice (Gilley & Gilley, 2002; Rummler & Brache, 1995; Watkins & Marsick, 1996), and strategy making as an essential role to leveraging HRD into the strategic conversation of organizations (Linkow, 1985; Torraco & Swanson, 1995), became central to the exploration of the construct and role of strategic HRD (Garavan, 2007; Lee, 1997; Yorks, 2004). Within this strategic developmental context, McCracken and Wallace (1999) offered a definition of strategic human resource development (SHRD):

> The creation of a learning culture, within which a range of training, development and learning strategies both respond to corporate strategy and also help shape and influence it. It is about meeting the organization's existing needs, but it is also about helping the organization to change and develop, to thrive and grow. It is the reciprocal, mutually enhancing, nature of the relationship between HRD and corporate strategy (p. 288).

In a similar vein, Watkins and Marsick (1996) described the learning organization as "one that learns continuously and transforms itself" and where "learning is a continuous, strategically used process—integrated with and running parallel to work" (p. 4), and Torraco and Swanson (1995) ventured that the role of HRD in organizational strategic planning should be to both "shape and support strategy" (p. 16). Later HRD professionals proposed scenario planning as a strategic tool for HRD

(Chermack, 2003a, 2003c, 2004; Chermack & Lynham, 2002; Chermack, Lynham, & Van der Merwe, 2006; Chermack, Van der Merwe, & Lynham, 2006; Chermack & Swanson, 2008; Provo et al., 1998; Swanson et al., 1998), clearly associating it with the notion of learning and expertise development (Chermack, 2003a, 2003c; Chermack, Lynham, & Van der Merwe, 2006; Chermack & Swanson, 2008; Chermack & Walton, 2006).

The purposes of this article are within these converging streams of thought and practice:

1. To investigate the association between scenario planning and the development of leadership capability and capacity;
2. To locate and present evidence related to this association from related literatures, practitioner–scholar expertise; and
3. To use these discoveries to describe the uncovered nature of this possible association;
4. To highlight implications of discoveries for HRD.

Research Questions and Method

This section presents a description of the research questions, mode of inquiry, and methods used in the two successive rounds of inquiry.

Research Questions

Four research questions, aligned with the four purposes, were used to direct a two-round inquiry. The first three questions were addressed in the first round of inquiry. The questions used were the following:

1. What is the association, if any, between scenario planning and the development of leadership capability and capacity?
2. What components of the process of scenario planning appear to be associated with the development of leadership capability and capacity?
3. What outcomes of scenario planning appear to be associated with the development of leadership capability and capacity?
4. What further evidence is there in the related data sources that suggests some trustworthiness of the model?

Method

A social constructivist mode of inquiry—one aimed at seeking new insights and deeper understanding of the phenomenon (Lincoln & Guba, 1985)—was selected for this study.

The constructs being studied, such as scenario planning and the development of leadership capability and capacity, are particularly well suited to exploration by social constructivist and qualitative research methods. According to Lincoln (2005), researchers choose these methods of inquiry "to understand how individuals and groups go about 'sense making' . . . a critical issue for understanding the impact of human resource development efforts" (p. 223). Qualitative research methods yield "richness, depth and variety in knowledge" (p. 223) and are useful to establish associations between constructs. Furthermore, these methods allow the research design to emerge rather than to be constructed entirely "a priori . . .because it is inconceivable that" every aspect of the design will be "known ahead of time" (Lincoln & Guba, 1985, p. 41).

During round one of the inquiry, data were gathered from one primary source and one secondary source. The primary source was that of semistructured interviews with two expert-practitioners in both scenario planning and leadership development (Denzin & Lincoln, 2005; Erlandson, Harris, Skipper, & Allen, 1993; Lincoln & Guba, 1985). Each participant was chosen due to his or her expertise and thus experience with both scenario planning and leadership development and was well suited to enlighten new insight and deeper understanding of the possible association between the two constructs under investigation.

Related literatures formed the secondary data source (Chermack & Passmore, 2005). These selected literatures, on both scenario planning and leadership components and competencies, provided theoretical, conceptual, and anecdotal descriptive evidence for not only an association between these two constructs but also for the nature of their association. The literatures were located by searching four common databases (Academic Search Premier, Educational Resources Information Center, Business Source Premier, ABI/Inform) and two search engines (Google and Microsoft Live Search) using a number of keywords, including but not limited to, scenarios, scenario planning, leadership, leadership development processes, leadership and scenario planning, scenarios and futuring, leadership and futuring, leadership characteristics, leadership competencies, performance leadership, and scenarios and performance. Additionally, more than 100 books on leadership, leadership development, scenario planning, and strategic planning were located and reviewed (Galvan, 2006; Torraco, 2005).

During round two of the inquiry, the secondary data sources were extended through available literatures and a sample of five scenario planning programs, located in university business schools in the United States, Australia, the United Kingdom, and South Africa, that enabled the address of the fourth research question. Doing so facilitated documentation of typical associations (Lincoln & Guba, 1985) of scenario planning with the development of leadership capability and capacity. These data were particularly valuable for further description and understanding of the nature of the association between (a) the process components of scenario planning and the development of leadership capability and capacity and (b) the outcome components of scenario planning and the development of leadership capability and capacity.

Data gathered during the first (and exploratory) round of the inquiry were systematically analyzed using the content analysis technique described by Lincoln and Guba (1985). Content analysis "is a powerful data reduction technique. Its major benefit comes from the fact that it is a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding" (Stemler, 2001, p. 1). To this end, each primary and secondary data source was unitized, transferred to data cards, and then systematically sorted into categories, coded, and finally clustered into major themes. Confirmability and trustworthiness of the thematic discoveries were buttressed through triangulation of the data sources, member checking with the interview participants, and peer checking, using replicability tests, among the three members of the research team (Lincoln & Guba, 1985).

Data collected during the second round of inquiry were directed by the model that was the outcome of round one. As such a typological analysis using the constant comparative method by Glaser and Strauss (1967) and adapted by Lincoln and Guba (1985) was used for analysis and synthesis of the data. In the constant comparative method, data are separated into a unit, the smallest piece of data that can stand by itself. Each unit was placed onto a separate data card and then systematically categorized, coded, and themed against the respective components of the model. As in round one of the inquiry, confirmability and trustworthiness of the discoveries were similarly enhanced. Data collection and analysis was discontinued when saturation—that is, when "continuing data collection produces tiny increments of new information in comparison to the effort expended to get them" (Lincoln & Guba, 1985, p. 350)—became evident around the data categories and themes contained in the model.

Discussion of Discoveries

This study presents four sets of discoveries. The first set is the synthesis of three frameworks from the literature, one theoretical and two conceptual. The resulting synthesis model provides strong conceptual support for the speculated association (or interaction) between scenario planning (as an independent variable) and the development of leadership capability and capacity (as a dependent variable; see Table 1). The resulting model also describes the outcome and process components of scenario planning (shown as the vertical/Y axis of Table 1) that appear associated with characteristics and competencies of leadership commonly linked to leadership capability and capacity (shown as the horizontal/X axis of Table 1). The model also highlights these two sets of

variables as interacting. This first set of discoveries thus addresses the concerns of the two working hypotheses and first three research questions (see Figure 1).

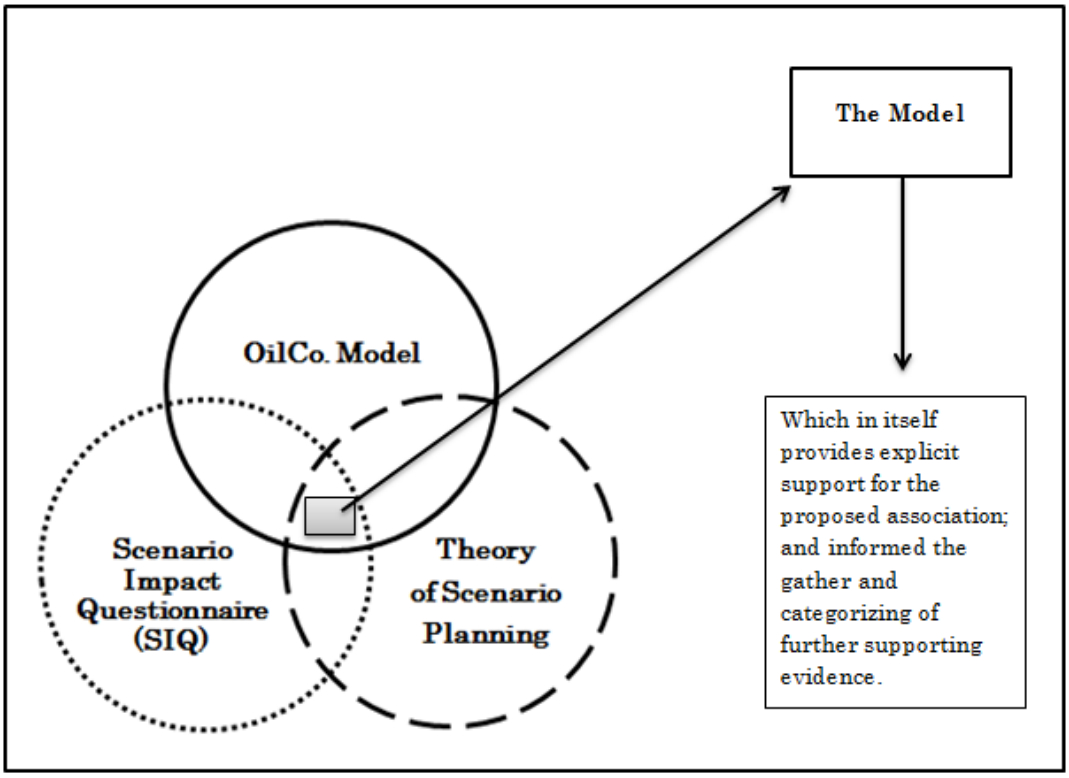

Figure 1: The Three Frameworks That Informed the Synthesis of the Model

Source: McWhorter, Lynham & Porter, 2008, p. 267

Table 1: Synthesis Model for Making Explicit the Association between Scenario Planning and the Development of Leadership Capability and Capacity

(Y Axis) Processes and Outcome Components of Scenario Planning (SP)	**(X Axis) The OilCo Model: Categories, Components, and Characteristics of Leadership Capability and Capacity Developed From the Experience of Scenario-Based Planning and Change**			
	Three Categories of Leadership			
	Being (Essence)	***Doing (Process)***	***Having (Outcome)***	
	Four Components and Corresponding Characteristics of Leadership			
	Personal qualities (Characteristics: commitment to the truth, courage, compassion, humility, authenticity, integrity.)	**Leadership responsibilities** (Characteristics: building a shared vision, creating the capacity to act, thinking systemically, communication through open and honest dialogue, engaging and involving others as a coach, mentor, and teacher.)	**Core values** (Characteristics: belief in people, trustworthiness, excellence, innovation, sense of urgency.)	**Premier results** (Characteristics: organizational and personal transformation, business performance, individual and organizational capability.)
Process components				
How to have and hold strategic conversations continuously	**X**	**X**	**X**	
How to make explicit and develop shared mental models and values	**X**	**X**	**X**	
Development of awareness sensitivity for organizational and environmental dynamics and how to think and act systematically within those environs	**X**	**X**	**X**	
How to order perceptions about alternative future environments and "think the unthinkable"	**X**	**X**	**X**	
How to learn collectively and institutionally	**X**	**X**	**X**	
How to develop, track, and select future options (direction) •	**X**	**X**		
How to develop a capacity for leadership and strategy development and implementation	**X**	**X**	**X**	
How to achieve alignment of thought and action, within the organization as a whole	**X**	**X**	**X**	

Continued

Table 1: Continued

(Y Axis) Processes and Outcome Components of Scenario Planning (SP)	**(X Axis) The OilCo Model: Categories, Components, and Characteristics of Leadership Capability and Capacity Developed From the Experience of Scenario-Based Planning and Change**			
	Three Categories of Leadership			
	Being (Essence)	***Doing (Process)***	***Having (Outcome)***	
	Four Components and Corresponding Characteristics of Leadership			
	Personal qualities (Characteristics: commitment to the truth, courage, compassion, humility, authenticity, integrity.)	**Leadership responsibilities** (Characteristics: building a shared vision, creating the capacity to act, thinking systemically, communication through open and honest dialogue, engaging and involving others as a coach, mentor, and teacher.)	**Core values** (Characteristics: belief in people, trustworthiness, excellence, innovation, sense of urgency.)	**Premier results** (Characteristics: organizational and personal transformation, business performance, individual and organizational capability.)
Outcome Components				
Increased capacity to learn—faster, deeper, individually, collectively, and organizationally	**X**		**X**	**X**
Ability to think and act systemically	**X**	**X**		**X**
Improved decision-making capability	**X**	**X**		**X**
Increased awareness of customer requests and needs	**X**			**X**
Improved organizational performance	**X**		**X**	**X**
Increased cross-functional communication and teamwork	**X**	**X**	**X**	**X**
Increased clarity of strategic options	**X**	**X**	**X**	
Increased ability to act and lead teams/ projects	**X**	**X**		**X**
Increased strategic thinking and planning ability	**X**	**X**		**X**
Ability to create vision and enroll others to its enactment	**X**	**X**	**X**	**X**

Source: McWhorter, Lynham & Porter, 2008, pp. 265-266

The second set of discoveries (Tables 2 and 3, respectively) offers selected data extracts from the relevant literature data sources (see Figure 1) that show support for

Table 2: Supportive Evidence from Related Leadership Literatures for the OilCo Model, the X Axis of the Model

OilCo Model Components (Y Axis) and Authors	Supporting Extracts from Related Leadership Literatures
Personal Qualities	
Kouzes and Posner (1995)	"Leaders are admired and willingly follow those who are hones, forward thinking, inspiring and competent" (p. 22)
Morrison (2001)	"Integrity forms the bedrock of character and is essential in leadership" (p. 65)
Gardner (1996)	"Leaders' skills, experience, and commitment can make a visible difference in the lives of people within and outside their organizations" (p. 36)
White-Newman as cited in Lynham (2000a)	"Personal virtues give moral fiber to one's ethos in order to be effective and ethical in interacting with others: courage and creativity, passion and empathy, trust and openness enable others to act, authenticity and confidence, hope and generosity" (p. 8)
Leadership Responsibilities	
Collins (2001)	"Leadership development includes a full range of leadership experiences including mentoring, on the job experiences & leader-follower relationships" (p. 44)
Senge (1990)	"In our work to help people develop their leadership capabilities, we stress the individual discipline of systems thinking, working with mental models and personal mastery" (pp. 359-360)
Nanus (1992)	"Vision always deals with the future. Indeed, vision is where tomorrow begins, for it expresses what you and others who share your vision will be working hard to create" (p. 8)
Kerr (1996)	"Every leader must understand the tools for managing change and give his or her people access to those tools" (p. 33)
Core Values	
Bennis (1993)	"Positive change requires three things from a leader: (1) gaining the trust of others; (2) expressing their vision clearly so that all understand and concur, and (3) persuades others to participate" (p. 106)
Fairholm and Fairholm (2000)	"For leaders to lead they need a united and harmonious environment characterized by mutual trust (p. 102)
Bass and Avolio (1993)	"In a highly innovative and satisfying organizational culture we are likely to see transformational leaders who build on assumptions that people are trustworthy and purposeful" (p. 113)
Kotter (1996)	"Establishing a sense of urgency is crucial to gaining needed cooperation in a change vision" (p. 36)
Premier Results	
Yukl and Van Fleet (1992)	"Leadership is viewed as a process that includes influencing task objectives and strategies of a group or organization" (p. 149)
Brungardt (1996)	"Leadership development is a continuous learning process that spans an entire lifetime; where knowledge and experience builds and allows for even more advanced learning and growth" (p. 83)
Yukl (1989)	"The most commonly used measure of leader effectiveness is the extent to which the leader's group or organization performs its task successfully and attains its goals" (p. 6)
Lynham and Chermack (2006)	"Leadership can therefore be conceived as a systems of interacting inputs, processes, outputs, and feedback that derive meaning, direction, and purpose from the larger performance system and environment within which it occurs" (p. 75)

Source: McWhorter, Lynham & Porter, 2008, pp. 268-269

each component axis of the synthesized model. Such evidential support is first provided for the horizontal (X) axis, that is, the characteristics and components of leadership capability and capacity developed from participation in scenario-based organizational interventions (see Table 2). Comparable evidence is then provided for the vertical (Y) axis, namely, the outcome and process components associated with scenario planning endeavors (see Table 3).

Table 3: Supportive Evidence from Related Scenario Planning (SP) Literatures for the Process and Outcome Components of SP, the Y Axis of the Synthesis Model

	Author Clusters and Extracts of Support in the Scenario Planning Literatures From the 1960s to Present		
Selected Process and Outcome Components of Scenario Planning (SP)	**Pre-Shell (Kahn) and the Royal Dutch Shell Era (Kahane, Newland, Ogilvy, Schwartz,Van der Heijden,Wack, and others)**	**HRD (Chermack, Lynham, Miller, Provo, Ruona, Swanson, Walton, and others)**	**Management and Other (Burt, Forrester, Godet, Hoyle, Mintzberg, Kleiner, Schoemaker, Senge, Porter,Van der Merwe, and others)**
Process components How to have and hold strategic conversations, continually	"Scenario planning provides a language through which resulting issues can be discussed in the organization" (Van der Heijden, 2005, p. 132)	"The strategic conversation creates the organizational dialogue through which individuals can reveal, analyze, share, and reconstruct their mental models, thus opening their minds to consider new possibilities" (Chermack, 2004, p. 305)	"The strategic conversation is one of the highest leverage areas for transformation" (Van der Merwe, 2005, p. 15) "Scenarios provide a common vocabulary . . . for communicating complex and sometimes paradoxical conditions" (Burt & van der Heijden., 2003, p. 1014)
How to make explicit and develop shared mental models	"Scenarios are thus the most powerful vehicles I know for challenging our 'mental models' about the world, and lifting the 'blinders' that limit our creativity and resourcefulness" (Schwartz, 1991, p. iv)	"Using scenarios to alter mental models for the purpose of strategic learning is one way in which scenarios and scenario planning provide new insights and different ways to see the world" (Korte & Chermack, 2007, p. 649)	"Only when we have a mental model of how something operates can we properly interpret the outcomes observation" (Georgantzas & Acar, 1995, p. 11)

Continued

Table 3: Continued

	Author Clusters and Extracts of Support in the Scenario Planning Literatures From the 1960s to Present		
Selected Process and Outcome Components of Scenario Planning (SP)	**Pre-Shell (Kahn) and the Royal Dutch Shell Era (Kahane, Newland, Ogilvy, Schwartz,Van der Heijden,Wack, and others)**	**HRD (Chermack, Lynham, Miller, Provo, Ruona, Swanson, Walton, and others)**	**Management and Other (Burt, Forrester, Godet, Hoyle, Mintzberg, Kleiner, Schoemaker, Senge, Porter,Van der Merwe, and others)**
How to order perceptions about alternative future environments and "think the unthinkable"	"To help the Pentagon plan for nuclear contingencies in the early 1960's, developed a methodology to 'think the unthinkable' which later became known as scenario planning" (Kahn, 1984)	"Scenarios and scenario planning allow decision makers within human systems to design custom systems . . . and seek new areas of advantage within their own environments" (Chermack & Walton, 2006, p. 54)	"Scenarios are a powerful device [to] think beyond the confines of existing conventional wisdom" (Porter, 1985, p. 447) [Scenario planning] "helps expand the range of possibilities we can see" (Schoemaker, 1995, p. 29)
Outcome components Improved decision-making capability	Wack (1985a) points out that by presenting multiple ways of seeing the world, "scenarios give managers something very precious: the ability to reperceive reality" (p. 150)	"The element of forethought inherent in the [scenario planning] process prepares [decision makers] to be proactive rather than reactive and accelerate action" (Provo et al., 1998, p. 336)	"Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will play out, a good decision is one that will play out well across several possible futures" (Mintzberg, Ahlstrand, & Lampel, 2005, p. 67)

Continued

Table 3: Continued

	Author Clusters and Extracts of Support in the Scenario Planning Literatures From the 1960s to Present		
Selected Process and Outcome Components of Scenario Planning (SP)	**Pre-Shell (Kahn) and the Royal Dutch Shell Era (Kahane, Newland, Ogilvy, Schwartz,Van der Heijden,Wack, and others)**	**HRD (Chermack, Lynham, Miller, Provo, Ruona, Swanson, Walton, and others)**	**Management and Other (Burt, Forrester, Godet, Hoyle, Mintzberg, Kleiner, Schoemaker, Senge, Porter,Van der Merwe, and others)**
Increased cross-functional communication and teamwork	"The [scenarios] produced several types of results: substantive messages, informal networks and understandings, and changed ways of thinking" (Kahane, 1992, p. 2)	Teams are expected to learn and work together; Team learning is a "critical component of scenario planning" (Chermack et al., 2006, p. 1427)	"Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will play out, a good decision is one that will play out well across several possible futures" (Mintzberg, Ahlstrand, & Lampel, 2005, p. 67) "Almost all important decisions are now made in teams . . . if teams learn, they become a microcosm for learning throughout the organization" (Senge, 1990, p. 236)
Ability to create vision and enroll others to its enactment	"It is the process of scenario planning that can bring to light the shared hopes of the community: its vision of a better future" (Ogilvy & Schwartz, 2002, p. 148)	"Planners . . . need skills in resolving communication breakdowns, reaching consensus, and building commitment" (Swanson et al., 1998, p. 591)	"Great leaders are remembered for their vision and ability to spark others through the art of persuasion to join in creating the visions" (Hoyle, 1995, p. 28).

Source: McWhorter, Lynham & Porter, 2008, pp. 270-272

The third set of findings are discoveries, deduced from the expert-interview data and providing supporting evidence for the synthesis model and thus (a) the association of process components of scenario planning with those of the development of leadership capability and capacity and (b) association of outcomes of scenario planning with the development of leadership capability and capacity. Finally, the fourth set of discoveries

offers further supporting evidence deduced from the supplementary data, that is, the sample of scenario planning programs at universities. Each set of inquiry discoveries is presented in the respective subsections.

The First Set of Discoveries: The Synthesis of the Three Informing Frameworks

Three frameworks—one theoretical and two conceptual—were used to develop the resulting synthesis model (see Table 1) that describes the association between scenario planning and the development of leadership capability and capacity and thus addresses the first three research questions. Figure 1 illustrates the integrative use of the three frameworks.

The first framework, a theory of scenario planning, illustrates process and outcomes of scenario planning (and thus the vertical/Y axis of the model presented in Table 1). The second, a case study, highlights characteristics and components of leadership capability and capacity (the horizontal/X axis of Table 1) perceived to result from participation in a scenario-based organizational intervention. The third framework, an expert-practitioner compiled questionnaire (scenario impact questionnaire or SIQ), presents sets of anecdotal, developmental, and outcome statements commonly associated with participation in scenario planning. The questionnaire presents perceptions of scenario planning with those of the development of leadership capability and capacity. Each framework, and how it was used to create the synthesis model, are discussed briefly next.

Scenario Planning Process and Outcome: A Theoretical Perspective

Although a process long in use, the first actual theory of scenario planning was synthesized by Chermack in 2003 (for a detailed description, see Chermack, 2003a, 2003b). This theoretical framework names, describes, and explains the key components of scenario planning: how they interact and what they result in.

According to this theory, the process components of scenario planning include the following:

- Scenarios (Schwartz, 1991)
- Learning (Wack, 1985a, 1985b, as cited in Chermack, 2003a)
- Mental models (Senge, 1990)
- Decisions (Chermack, 2004)
- Ability to reach desired outcome (Chermack, 2003a)
- Ability of the organization to respond to change (Van der Merwe, 2005).

Chermack (2005) described the first four components of the list as performance drivers and the fifth (performance) as "the primary outcome of the planning system" (p. 63). This distinction highlights the first four units as components of the scenario planning process and improved performance as the desired outcome of scenario planning. The particular usefulness of this theoretical framework was that it makes both process and outcome characteristics and components of scenario planning explicit and thus comparable with those associated with leadership capability and capacity.

Characteristics and components of leadership capability and capacity associated with the experience of scenario planning: A senior management perspective

The second guiding framework is that of "the emerging OilCo leadership model" (Kleiner & Roth, 2000, p. 108). OilCo, a fictitious name given to an American oil company, is an actual company case study of an organization-wide scenario-based transformational intervention. The use of this model lies in its practical credibility, having been developed by a senior manager, as a representation of the leadership capabilities and capacity associated with the experience of participation in an organization-wide scenario-based strategy project.

The OilCo model describes leadership capability and capacity in terms of four components, each with specified characteristics that fall into three categories. These categories are described in detail.

The first component is personal qualities and includes the characteristics of "commitment to the truth, courage, compassion, humility, authenticity, and integrity." The second component, leadership responsibilities, consists of the characteristics of "building shared vision, creating the capacity to act, thinking systemically, communicating through open and honest dialogue, and engaging and involving others as a coach, mentor, and teacher." The third component of core values encompasses the characteristics of "belief in people, trustworthiness, excellence, innovation, and sense of urgency." And the fourth component, premier results, is made up by the characteristics of "organizational and personal transformation, business performance, individual and

organizational capacity." The first component corresponds with the first category of leadership highlighted in the model, namely, *BEING*, the second and third components with the second category, *DOING*, and the third and fourth components with the third category, namely, *HAVING* (see *X* axis in Table 1; for further details of the model and case, see Kleiner & Roth, 2000, pp. 108-109).

The OilCo case was particularly useful to the inquiry in that it makes the development of leadership capability and capacity associated with scenario-based planning and change explicit. As with the first framework, it also makes leadership capability and capacity comparable with the identifiable process and outcome components of scenario planning.

Scenario Planning and Leadership Capability and Capacity: An Anecdotal and Developmental Perspective

The third selected framework comes from a structured questionnaire compiled by an expert-practitioner in scenario-based strategy and leadership capacity and capability development. Grounded in extensive experience in the practice of both constructs, this questionnaire represents "a ranked and ordered collection of all the anecdotal claims that people [and the literature] have made of scenario planning" (Interview Participant No. 1, 2006, p. 8).

These claims are grouped into five clusters: (a) overall impact, (b) awareness levels (about the operating/micro and enacted/macro environments), (c) leadership capacity and organizational alignment, (d) collective learning, and (e) the capacity to develop and execute strategy (see also www.cil.net for further details on this

questionnaire). These clusters also describe process and outcome components of scenario planning and thus explicitly suggest their association with the development of leadership capability and capacity (Van der Merwe, 2005).

The SIQ (Van der Merwe, 1999) was therefore most informative to the conduct of this inquiry. It not only makes the process and outcome components of scenario-based strategic planning explicit but it does so in developmental terms (knowledge, skills, attitudes, and values) associated with both scenario planning and leadership. The SIQ provides an explicit means for describing, identifying, and measuring association between scenario planning and the development of leadership capability and capacity.

Together, these three frameworks enabled the hypothesized association between scenario planning and the development of leadership capability and capacity to be operationalized. By using the theory of scenario planning (Chermack, 2003b, 2005) and SIQ (Van der Merwe, 1999) as proxies for the process and outcome components of scenario planning (*Y* axis) and the OilCo model (Kleiner & Roth, 2000) as the same for leadership capabilities and capacity developed from participation in scenario planning (*X* axis), we were able to not only synthesize a model that exemplified the association between these two constructs/variables (see Table 1), but also show which components of which construct seemed to be more specifically associated (represented by area of check marks in Table 1) and more specifically describe the components of each of these constructs. The resulting synthesis model is presented in Table 1.

Next, further supporting and descriptive evidence was sought from related literatures and other data sources for each of the axes components in the model, enabling us to address Research Question 4 of this inquiry (see Figure 1). Selected outcomes from the extended review, analysis, and resulting synthesis from each of the data sources (two secondary and one primary) are presented in the next three sets of discoveries, first from related literatures on leadership characteristics and components (set two, Table 2) and scenario planning (set two, Table 3), next from the two initial expert interviews (set three), and finally (set four) from the sample of scenario planning programs in universities.

The Second Set of Discoveries: Support from Extended Review of Related Leadership and Scenario Planning Literatures

The second set of discoveries is offered by way of Tables 2 and 3. These tables present, respectively, descriptive extracts from related leadership (Table 2) and scenario planning (Table 3) literatures that evidence further support for the x and y axes identified and described in the model, and thus for the hypothesized association between the two constructs under inquiry.

The extracts in Table 2, a sample of numerous such statements of supporting evidence synthesized from the extended literature review, suggest clear accumulation of the related leadership literature data around the components of the OilCo model and thus as a proxy for the leadership capabilities and capacity developed from participation in scenario planning. This discovery gives us some confidence in the trustworthiness of this axis (X) of the synthesized model, and it provides some confirmable evidence for the

proposed association between scenario planning and the development of leadership capabilities and capacities.

In the above genre, Table 3 highlights the same for the Y axis of the model. the process and outcome components of scenario planning. These supporting and descriptive extracts have been further categorized into clusters of authors on scenario planning in three discernible contexts of practice, namely, pre-Shell and Royal Dutch Shell, HRD, and management, and beyond. For purposes of overview and succinctness, supporting extracts are provided for three scenario planning process and three outcome components included in the Y axis of the model presented in Table 1.

The extracts in Table 3 represent but a few of many similar evidences of support for the Y axis, or process and outcome components of the scenario planning process synthesized in the model, and appear to be associated with the development of leadership capability and capacity.

Discoveries from Tables 2 and 3 help in addressing Research Question 4, "*What further evidence is there in the related data sources accessed that suggests some trustworthiness of the synthesized model*?" In this case in the extended review of related leadership and scenario planning literatures.

The Third Set of Discoveries: Support from the Expert Interview Data

The third set of discoveries is deduced from the interviews with two expert-practitioners in both scenario planning and leadership development. Illustrated in Table 4 are selected extracts from these data that describe and illuminate, respectively, four

process and four outcome components of scenario planning associated with the development of leadership capability and capacity (see model in Table 1).

Table 4: Supportive Evidence from Expert Interview Data for the Process and Outcome Components of SP, the Y Axis of the Synthesis Model

Process and Outcome Components of Scenario Planning	Supportive Data Extracts from Expert Interviews
Selected process components	
How to have and hold strategic conversations, continuously	"[Scenario Planning] is being intensively engaged in a dialogue about the different ways the future might turn out to be" (Interview Participant No. 1 [IP1], p. 3)
	"From a process point of view, you are engaged in the strategic conversation—which is always collaborative and always persuasive—and always an exchange of different mental models—which is always the most difficult kind of conversation to have" (IP1, p. 3)
	"So, [scenario planning] enables communication through open and honest dialogue" (IP1, p. 3)
How to make explicit and develop shared mental models and values	"Scenario planning creates visions that are shared, that are acted upon, and can change the world. Individuals will step up and then it becomes a distributed shared leadership" (IP2, p. 3)
How to order perceptions about alternative future environments and "think the unthinkable"	"One of the capacities for leadership is to think the unthinkable . . . and that's the whole [scenario planning] methodology as developed in the Pentagon by Herman Kahn, which was to enable people to think the unthinkable" (IP1, p. 5)
	"If leaders believe there is a reason to lead, and develop a strong knowledge base of environmental trends it enables others to see and think of places where they wouldn't have otherwise gone" (IP2, p.4)
	"Scenario planning helps you to see things that other people don't want to see, and takes people where they don't want to go" (IP2, p. 4)
How to develop track, and select future options (direction)	"Scenario planning allows you to identify more options, more risks, more opportunities . . . and that's what leadership is all about—to continually track where the options are going into the future, and then to select the best options" (IP1, p. 4)
	"It's much better to have multiple pathways into the future so that you can cover a portfolio of eventualities that might occur" (IP1, p. 5)

Continued

Table 4: Continued

Process and Outcome Components of Scenario Planning	Supportive Data Extracts from Expert Interviews
Selected outcome components	
Ability to think and act systemically	"People learn naturally that the systemic view of the world is much more useful and…assists you in making hypotheses" (IP1, p. 4)
	"Thinking systemically…is a dimension of leadership that gets developed by the scenario planning process" (IP1, p. 5)
Increased cross-functional communication and teamwork	The entire organization must know the vision and take action in carrying out that vision. Leaders must ensure that progress, cost and feedback is continuously disseminated and distributed among the people involved so the system has a formative assessment of expected outcomes throughout the process" (IP2, p. 8)
Increased clarity of strategic options	"In Art Kleiner's article he noted that Pierre Wack saw himself . . . as being the lead wolf in the wolf pack . . . saying 'my job is to see and to warn the pack of any dangers that are ahead'" (IP1, 2006, p. 3)
Ability to create vision and enroll others to its enactment	"Knowing that they were all acting off a common set of assumptions about the future…they would then fly in formation going in the same direction" (IP1, p. 5)
	"[Scenario planning] is a matter of people spreading their wings and creating ways to get toward the vision" (IP2, p. 3)
	"Scenario planning is so important in terms of trying to anticipate and manage the various factors and forces and variables that help you create the vision" (IP2, p. 3)

Source: McWhorter, Lynham and Porter, 2008, p. 276

The sampling of primary data extracts shows clear data accumulation around the components of the Y axis of the model (see Table 1) and provides further descriptive evidence for the proposed association between leadership capability and capacity development. This discovery set aids in answering Research Question 4, "*What further evidence is there in the related data sources accessed that suggests some trustworthiness of the synthesized model*?"

The Fourth Set of Discoveries: Support from the Supplemental Data

The fourth and final set of discoveries is illustrated in Table 5. Offering still

further support for the model (see Table 1) are data garnered from a sampling of scenario planning programs situated in university business schools. The review of a number of

Table 5: Supportive Evidence from Scenario Planning Programs in University Business Schools for the Synthesis Model

University Program	Program Description
Oxford University, Saïd Business School, United Kingdom (http://www.sbs .ox.ac.uk/exceed/ open/scenarios/)	*Name*: The Oxford Scenarios Programme (5-day duration). *Aim/mission:* Offers executives an opportunity to work with advanced techniques for scenario building learning "how scenarios work to contribute to the strategic conversations in or among organizations…to further enhance leadership ability to align different constituencies within your company"(Oxford University, 2006, ¶ 2). *Intended target audience*: business executives and teams.
Curtin University of Technology, Curtin Business School, Western Australia (http://www .handbook.curtin .edu.au/courses)	*Name*: "The Scenario Thinking & Planning Programme" *Aim/mission:* "Enhancing the strategic…to anticipate and prepare for the future and secure the long-term viability of their organizations"(Curtin University of Technology, 2007, ¶ 3). *Other*: Graduate certification in future studies with study credited toward MBA program *Intended target audience*: senior management
University of Pennsylvania's Wharton's Leadership Development Program, USA (http:// executiveeducation .wharton.upenn.edu)	*Name*: "The CFO: Becoming a Strategic Partner" *Aim/mission:* "Applies a scenario-based strategic planning process that examines possible futures to develop strategies for profiting from uncertainty…learn approaches for managing risk, creating flexible strategies…develop growth strategies, 2007, ¶ 2). *Other*: 5-day program *Intended target audience*: chief financial officers
Cornell University's eCornell's Executive Leadership series, USA (http://www .ecornell.com/ corporate/catalog/ certificates/)	*Name*: "Strategic Thinking and Scenario Planning" courses as part of executive Leadership series. *Aim/mission:* "A problem-based approach to learning…built around realistic case studies and scenarios. All courses are self-paced, and are facilitated by an eCornell instructor to enhance strategic planning process through private, online courses" (Cornell University, 2007, ¶ 3). *Intended target audience*: executives in the top 1% of organizations
University of Kwazulu-Natal's Leadership Center, South Africa (http:// www. leadershipcentre.co .za/future.html)	*Name*: Various scenario planning workshops (1-4 days); "Futures Thinking for Traversing Complexity" (course that incorporates futures and scenario building techniques). *Aim/mission:* "To ensure that the organisations, and the people that lead them, have the skills and competencies required to deal with a future that is unknowable, unpredictable, changing, complex and increasingly competitive" (University of Kwazulu, 2007, ¶ 2). *Other*: 5-day program *Intended target audience*: organizational leadership and future leaders.

Source: McWhorter, Lynham and Porter, 2008, p. 277

such programs including (a) Oxford University, Saïd Business School's Oxford Scenarios Programme; (b) Curtin University of Technology, Curtin Business School's Scenario Planning and Research Unit; (c) University of Pennsylvania's Wharton's Leadership Development Program; (d) Cornell University's eCornell's Executive Leadership series; and (e) University of Kwazulu-Natal's Leadership Center—illustrate the design and use of these programs specifically for business executives and leaders. Clearly implicit in the specified name, aim/mission, and intended target audience (see Table 5) of these respective programs is an applied association between scenario planning and leadership capability and capacity development.

Together, these four sets of discoveries from the data interrogated evidence addressing the four research questions of this inquiry. Specifically, those from set one (see Table 1) enable us to answer Research Questions 1, 2 and 3, and from sets two (Table 2) and sets three and four (see Tables 3-5) Research Question 4.

These discoveries provide supporting evidence for not only the proposed association between scenario planning and the development of leadership capability and capacity but also for the nature of this association. They also lend developing confidence in the use of the resulting model (see Table 1) as a proxy for this association. A number of implications of these discoveries are highlighted next.

Implications of Discoveries

Numerous potential implications can be discerned from the discoveries of this inquiry. Those immediately evident and highlighted in this section specifically pertain to the construction of scenario planning as HRD's strategic learning tool. First, direct

involvement in scenario planning places HRD not only in a role of influence on the leadership of an organization (or other kind of performance system) but also enables it to play what Torraco and Swanson (1995) referred to as both "supporting and shaping strategy" (p. 16). Second, this involvement enables HRD to not only facilitate strategy making but also in the development of leadership capability and capacity at the individual, group, process, and organizational levels (Swanson, 2007; Swanson & Holton, 2001).

Third, scenario planning and the development of leadership capability and capacity are both very expensive intervention investments made by organizations and are usually pursued independently of each other. However, discoveries from this inquiry suggest a clear interdependence between these two kinds of very strategic interventions. Using them as such will make for more efficiency and cost effectiveness of both. Fourth, a discernable outcome of the leadership capability and capacity developed from participation in the scenario planning process is that of team building and development, making scenario planning a high-leverage means/tool of intervention to this end. The same applies for the other components of the model (see Table 1), further underscoring this leverage.

A fifth implication of these discoveries is for existing scenario planning theory, more specifically the theory of scenario planning offered by Chermack (2003b). In this regard, the discoveries suggest leadership (capability and capacity) as an important, but currently missing, unit of the theory. They could therefore be useful to inform further "refinement and development" (Lynham, 2002, p. 231) of this theory.

Sixth, a noted gap in the scenario planning literature is purposeful evaluation of the outcomes of this kind of intervention (Chermack et al., 2006). The model offered in Table 1 presents a number of discernible and thus measurable components of scenario planning and could therefore be useful to this end and to address this gap. A further notable implication is the utility of the model (see Table 1) as a potential metric for the development of leadership capability and capacity from the participation in scenario-based interventions.

This model helps to operationalize this resulting capability and capacity. With increased confidence in the model from subsequent rounds of inquiry, confidence in the use of the model will result to this end. The above implications clearly underscore the strategic value of scenario planning to HRD. They also explicitly emphasize scenario planning as a strategic learning tool for HRD.

Conclusion

There is an emergent and continuous nature to this inquiry. The next challenge is to establish increased confidence in and trustworthiness of the discoveries to date, particularly in the resulting synthesis model. Extending the inquiry should include additional field-based and empirical data, which will enable testing the components of the model and the model in action—and thus the association of scenario planning with the development of leadership capability and capacity. Becoming more rigorous about this association will further refine the synthesis and development of a model and a theoretical framework of scenario-based leadership.

CHAPTER III

CUMULATING EVIDENCE OF SCENARIO PLANNING AS THE DEVELOPMENT OF LEADERSHIP CAPABILITY AND CAPACITY AND THE EMERGENCE OF THE CONSTRUCT OF SCENARIO BASED LEADERSHIP

Synopsis

Contemporary organizations are faced with many challenges such as financial uncertainty, global competition, and high rates of change. To remain competitive, organizations must find new ways to develop leadership capability and capacity. Scenario planning, a strategic learning tool used by top companies such as Google, AT&T, Dow and Motorola, has been posited as a way of developing both strategy and leadership capability and capacity. This study builds on four sequential rounds of earlier inquiry examining the perceived association between scenario planning and the development of leadership capability and capacity (McWhorter, Lynham & Porter, 2008; McWhorter, Porter, Lynham & Chermack, 2007; McWhorter, Porter, Lynham, Chermack & van der Merwe, 2007) with the current inquiry examining the hypothesized association between scenario planning and the development of leadership capability and capacity. Utilizing purposive sampling, additional data were gathered through semi-structured interviews with five expert-practitioners who were experienced in both scenario planning and leadership development. The demographics of the five participants represented expert-practitioners from three continents (North America, Africa, and Europe). Also, five published reports from scenario planning activities were examined. Findings in this study provide further evidence and increased confidence in

the hypothesized association between scenario planning and the development of leadership capability and capacity and allow for the beginning conceptualization of the construct of *scenario-based leadership*.

Introduction

Amid global economic uncertainty, organizations are turning to the development of leadership capability and capacity for strategic advantage and viability (Avolio, 2011; Center for Creative Leadership, 2008; Fisher-Yoshida & Geller, 2009; Murphy & Riggio, 2003; Wheeler, McFarland & Kleiner, 2007). The increased demands on contemporary organizations suggest that leadership in the twenty-first century requires enlarged capacity and new leadership competencies (Aguirre, Post & Hewlett, 2009; Murphy & Riggio, 2003; Fisher-Yoshida & Geller, 2009; Lynham, 1998, 2000a; Lynham & Chermack, 2006; Nafukho, Wawire & Mungania-Lam, 2011; Yukl, 2010). To address these new demands, Ardichvili and Mandersheid (2008) called for novel ways to develop leadership capability and capacity within organizational settings urging human resource development (HRD) professionals to discover "new and innovative ways to develop leadership talent" (p. 628) because "great change begins with great ideas" (Vanderbilt, 2010, ¶ 3).

Similarly, an upsurge of scenario planning has been noted over the past decade (Bradfield, Wright, Burt, Cairns, & van der Heijden, 2005; Chermack, 2011; Chermack, Lynham & Ruona, 2001; Chermack & Swanson, 2008; Niles, 2009). Most notably, a rise in scenario planning occurred immediately following the attacks of September 11th, 2001, then again with the emergence of a recession and global credit crisis, and

expectations for the same upsurge to follow the recent political uprisings seen around the world—each of these events brought high volatility and uncertainty to the forefront (Finikiotis, 2011; Page, Yeoman, Connell & Greenwood, 2010; Ramirez, Selsky & van der Heijden, 2008; Tuna, 2009). Fahey (2003) reported that many firms, including Dow Corning, Shell Oil, Xerox, AT&T, Baxter Healthcare, Sprint, Motorola, 3M, Boeing and GM, were presenting their scenario planning work at public conferences suggesting that scenario planning has become part of the standard strategy in many leading firms" (p. 7).

Given that both the development of leadership and scenario planning are very costly endeavors in both money and time (see Millett, 2003; Van Velsor, Ruderman & McCauley, 2010), organizational benefits are likely if both endeavors are pursued simultaneously. Following this stream of thought, Volckmann (2004, 2005) posited scenario planning as a strategy for leader development and expanding the leadership capacity within organizations. He argued that such development includes building of "capacities of individuals to perceive, comprehend and engage effectively with events and conditions as they unfold in a world of ambiguity and complexity" (2005, p. 6), preparing participants to engage with uncertainty without relying on past history for predicting likely future events.

Similarly, a study by two of the authors of this article into the association between scenario planning and the development of leadership capability and capacity found "a clear interdependence between these two kinds of strategic interventions" (McWhorter, Lynham & Porter, 2008, p. 278) suggesting that the two cost-intensive practices of scenario planning and the development of leadership capability and capacity

could be pursued concomitantly. The statement of the problem driving this study is discussed in the next section.

The Problem, Need and Purpose for the Inquiry

The problem driving this study, the need for its conduct, and explicit purpose, can be articulated as follows. On the one hand, the uncertainty and volatility of the current business environment results in a critical need for new and increased leadership capability and capacity. Since leadership is thought to be the single most important determinant of success within an organization (Collins, 2005; Wheeler, McFarland & Kleiner, 2007) it serves organizations to invest wisely in this regard. On the other hand, scenario planning, an intervention typically used to address uncertainty in the business environment, also enhances, for example, skills associated with improved learning, conversation quality and engagement, developing shared mental models, and improved decision-making (Chermack, 2003, 2004; Chermack & Lynham, 2002; Senge, 1990); all skills regularly associated, too, with leadership capability and capacity development (McWhorter, Lynham & Porter, 2008).

In spite of this implicit link between scenario planning and the development of leadership capability and capacity, one that appears to be embedded in both the process and outcomes of scenario planning, it has not yet been made explicit, nor evidence offered to this effect (McWhorter, Lynham & Porter, 2008; McWhorter, Porter, Lynham, Chermack & van der Merwe, 2007). Therefore, structured study of this potential role of scenario planning, and how it might also be used to facilitate leadership capability and capacity, is needed.

Thus, the overarching purpose of this study is to begin to add to an emergent and exploratory inquiry aimed at gathering and advancing cumulating evidence for the hypothesized association between scenario planning and the development of leadership capability and capacity (see McWhorter, Lynham & Porter, 2008). It does so by folding in two sets of additional findings to data previously collected in three earlier rounds of inquiry. The additional data collected in this study from three additional expert-practitioner semi-structured interviews and published scenario planning project reports (for a total of five interviews) informs the emergent construct of *scenario-based leadership* (and will be useful in the development of a theory of the same at a future time).

Research Questions

In order to achieve the overarching purpose of this study, four guiding research questions were formulated and answered: 1) Based on expert-practitioner perceptions and published scenario planning reports, what is the perceived association, if any, between scenario planning and the development of leadership capability and capacity?, 2) Based on expert-practitioner perceptions and published scenario planning reports, what components of the process of scenario planning are perceived to be compellingly associated with the development of leadership capability and capacity?, 3) Based on expert-practitioner perceptions and published scenario planning reports, what outcomes of scenario planning are perceived to be compellingly associated with the development of leadership capability and capacity?, and 4) Based on expert-practitioner perceptions

and published scenario planning reports, what appears to be the nature of the emerging construct of *scenario-based leadership*?

Theoretical Frameworks

Three theoretical frameworks were used to inform this inquiry. The first framework, a theory of scenario planning (Chermack, 2003, 2004, 2011), was useful because it illustrated the process and outcomes of scenario planning from a systemic and theoretical perspective. This theory identified process components of scenario planning such as: scenarios, learning, decision making, and mental models. The theory also named the outcomes of scenario planning such as the ability of the organization to respond to change, and the ability to reach desired outcomes, also identified as improving organizational performance (Chermack, 2003, 2004, 2005, 2011; Schwartz, 1991; Senge, 1990, Van der Merwe, 2005). This theoretical framework is quite useful in the current study because it allows a comparison between the process components and outcome characteristics of scenario planning and those associated with the development of leadership capability and capacity.

An expert practitioner-scholar questionnaire developed by van der Merwe (2005) offered the second informing framework in this study--a synthesis of sets of statements commonly associated with scenario planning. This instrument provides a ranked description of scenario planning processes and outcomes from both an anecdotal and developmental perspective.

A third framework useful in this study was a model of leadership developed through involvement in scenario planning at a large U.S. organization during the 1980s

(Kleiner & Roth, 2000). This experienced-based model termed OilCo (a fictitious company) presented three categories of leadership: *Being*, *Doing*, and *Having* (see Kleiner & Roth, 2000, pp. 108-109).

Together, these frameworks were integrated into a synthesis model (see McWhorter, Lynham & Porter, 2008) useful as a heuristic for gathering and sorting evidence of the hypothesized association between scenario planning and the development of leadership capability and capacity. This (synthesis) model was used to guide and inform this next and fourth round of inquiry into the hypothesized association. Table 6 illustrates the nature and design of the four rounds of inquiry, its continually emergent nature and subsequent cumulating evidence (see Lincoln & Guba, 1985) of the hypothesized association.

The current study represents the fourth round of the extended inquiry, each of which has resulted in further cumulating of compelling evidence of this association, and subsequently increased trustworthiness in the initial hypothesis of the association between scenario planning and the development of leadership capability and capacity. An overview of relevant literature used to inform the ensuing findings and discussion is presented next.

Table 6: Four Rounds of the Inquiry into Scenario Planning as the Development of Leadership Capability and Capacity

	Rounds of Inquiry			
Contrasting Components of each Round of Inquiry	**One**	**Two**	**Three**	**Four**
Overarching Purpose/ Proposition	"Scenario planning is also about leadership development" (McWhorter, Porter, Lynham, & Chermack, 2007, p. 540).	"To investigate the association between SP and the development of leadership capability and capacity" (McWhorter, Lynham & Porter, 2008, p. 261)	"To garner further evidence for the link between SP and LD" (McWhorter, Porter, Lynham, Chermack, & van der Merwe, 2007, p. 2).	To add to an emergent and exploratory inquiry aimed at gathering and advancing cumulative evidence for the hypothesized association between SP and DLCC…by folding in 2 sets of additional data (3 additional expert-practitioner interviews and published SP projects).
Hypotheses	1. Leadership Development (LD) is an outcome of scenario planning (SP), and 2. Components of the process of SP are also components of LD	1. Components of the scenario planning process are conducive to leadership development 2. Leadership development is an outcome of scenario planning.	1. Components of the scenario planning process are conducive to leadership development 2. Leadership development is an outcome of scenario planning.	1. Components of theSP process are conducive to the development of Leadership Capability and Capacity (DLCC) 2. DLCC is an outcome of scenario planning.
Research Questions (RQs)	1. What evidence is there to support the hypothesis that components of the *process* of SP are also components of the process of LD? 2. What evidence is there to support the hypothesis that LD is an *outcome* of SP? 3. Given the outcomes to RQs 1 and 2, are the guiding hypothesis and central proposition reasonable and thus worthy of further inquiry?	1. What is the association, if any, between SP and the development of leadership capability and capacity? 2. What components of the process of SP appear to be associated with the development of leadership capability and capacity? 3. What outcomes of SP appear to be associated with the development of leadership capability and capacity? 3. What further evidence is there in the related data sources that suggests some trustworthiness of the model?	1. What supporting evidence from SP applications and university leadership development programs suggests that components of the process of SP are conducive to the development of leadership capability and capacity? 2. What supporting evidence from scenario applications and university leadership capability and capacity? 3. What supporting evidence from scenario applications and university LD programs suggests the development of leadership capability and capacity as an outcome of SP?	1. Based on expert-practitioner perceptions and published SP projects, what is the perceived association, if any, between SP and the DLCC?, 2. Based on expert-practitioner perceptions and published SP projects, what components of the process of SP are perceived to be compellingly associated with the DLCC?, 3. Based on expert-practitioner perceptions and published SP projects, what outcomes of SP are perceived to be compellingly associated with DLCC?, and 4. Based on expert-practitioner perceptions and published SP projects, what appears to be the nature of the emerging construct of *scenario-based leadership*?

(Continued)

Table 6: Continued

	Rounds of Inquiry			
Contrasting Components of each Round of Inquiry	**One**	**Two**	**Three**	**Four**
Guiding Theoretical Frameworks	A theory of scenario planning (Chermack, 2003), the Scenario Impact Questionnaire (SIQ), (van der Merwe, 1999), and OilCo Leadership Model (Kleiner & Roth, 2000)	A theory of scenario planning (Chermack, 2003), the Scenario Impact Questionnaire (SIQ), (van der Merwe, 1999), and OilCo Leadership Model (Kleiner & Roth, 2000)	A theory of scenario planning (Chermack, 2003), the Scenario Impact Questionnaire (SIQ), (van der Merwe, 1999), and OilCo Leadership Model (Kleiner & Roth, 2000)	A theory of scenario planning (Chermack, 2003), the Scenario Impact Questionnaire (SIQ), (van der Merwe, 1999), and OilCo Leadership Model (Kleiner & Roth, 2000)
Data sources	Related leadership and LD literature, SP literature, semi-structured interviews with ***two*** expert-practitioners in both SP and LD	Related leadership and LD literature, SP literature, exploratory semi-structured interviews with ***two*** expert-practitioners in both SP and LD, ***five*** published scenario reports, ***five*** university programs integrating scenario planning and leadership development	Related leadership and LD literature, SP literature, semi-structured interviews with ***two*** expert-practitioners in both SP and LD, ***ten*** published scenario reports, ***nine*** university programs integrating scenario planning and leadership development	Related leadership and LD literature, SP literature, semi-structured interviews with ***five*** expert-practitioners in both SP and LD and ***five*** published scenario reports
Findings	1. *Integrated heuristic* of the three informing frameworks 2. Supportive evidence from related literature for the integrated heuristic 3. Supportive evidence from the Expert Interview Data for the integrated heuristic	1. *Synthesis model* of the three informing frameworks 2. Supportive evidence from related literature for the *synthesis model* 3. Supportive evidence from the Expert Interview Data 4. Supportive evidence from the Supplemental Data 5. Supportive evidence from the University Programs	1. Additional confirmatory evidence for the eight identified process themes of SP that overlap with those of LD in the *synthesis model* 2. Additional confirmatory evidence for the ten identified outcome themes of SP that overlap with those of LD in the *synthesis model* 3. Discovery of **two additional outcome themes** of SP that overlap with those of LD that need to be added to the *synthesis model*	1. Sixteen themes emerged from interviews underscores the implicit (as in tacit) nature of hypothesized relationship of SP as DLCC 2. Integration of synthesis model with outcomes of current study providing further cumulating evidence of hypothesized relationship of SP as DLCC 3. Published scenario planning reports provide support for interviews and therefore *synthesis model* reflecting four rounds of inquiry

Continued

Table 6: Continued

	Rounds of Inquiry			
Contrasting Components of each Round of Inquiry	**One**	**Two**	**Three**	**Four**
Publication Citation	McWhorter, R. R., Porter, D. E., Lynham, S. A., & Chermack, T. J. (2007). In F. M. Nafukho, T. J. Chermack, & C. M. Graham (Eds.), Refereed *Proceedings of the 2007 Academy of Human Resource Development Annual Research Conference* (pp. 539- 546). Bowling Green, OH: Academy of Human Resource Development.	McWhorter, R. R., Lynham, S. A., & Porter, D. E. (2008). Scenario planning as developing leadership capability and capacity. *Advances in Developing Leadership Capability and Capacity, 10*(2), 258-284. doi 10.1177/1523422307313332	McWhorter, R. R., Porter, D. E., Lynham, S. A., Chermack, T. J., & van der Merwe, L. (2007). Scenario planning as the development of leadership. In D. Jepson (Chair), *The 8th International Conference on HRD Research and Practice across Europe*, June 27-29, 2007, Oxford, UK: UFHRD.	(Current Manuscript)

Informing Literatures

The Development of Leadership Capability and Capacity

The development of leadership capability and capacity within organizational settings is a major focus of this study. There is extensive literature on the *development of leaders* but far less focusing on the broader processes of *leadership development* (Ardichvili & Manderscheid, 2008; Day & O'Connor, 2003; McCauley, Van Velsor & Ruderman, 2010; Nafukho, Wawire & Mungania-Lam, 2011; Yukl, 2010), and an even smaller number of empirical studies to this same end (Day & O'Connor, 2003). Numerous scholars have differentiated between *leader development* and the *development of leadership* (leadership development), with the primary dissimilarity being the locus of growth—*leader development* occurs within the *individual* employee, while the *development of leadership* (leadership development) refers to the increase in an

organization's leadership capacity (Day, 2001; Day & O'Connor, 2003; Hart, Conklin & Allen, 2008; McCauley, Van Velsor & Ruderman, 2010).

Leadership development has been defined as "the expansion of a collective's capacity to produce direction, alignment, and commitment…with a collective [defined as] any group of people who share work" (McCauley, Van Velsor & Ruderman, 2010, p. 20), such as work teams, teams, partnerships, organizations, communities and nations. Adapting the aforementioned definition for the work of human resource development (HRD), other scholars have contextualized it within the socio-cultural organization environment synthesizing the definition for the development of leadership as "a process of expanding an organization's capacity to generate leadership potential within the organization to achieve organizational goals" (Ardichvili & Manderscheid, 2008; see also Hart, Conklin & Allen, 2008; Hurt & Homan, 2005). Therefore, it can be surmised from the literature that organizations with high leadership capacity involve multiple stakeholders in the process and outcome of leadership (Lynham, 2000a).

Defining the *development of leadership capability and capacity* by its performance outcomes (i.e. achieving its organizational goals) offers a view of what collectives need to be sustained in the current business environment (Holton & Lynham, 2000a; Lynham & Chermack, 2006; McCauley, Van Velsor & Ruderman, 2010). Further, performance improvement can be examined when consciously viewing leadership as being "in service to a larger performance system" (Lynham, 2000a, p. 6). Considering the *development of leadership as a system* offers benefits for organizations within highly dynamic environments by offering "flexibility…and the development of

the least experienced members" (Klein, Ziegert, Knight, & Xiao, 2005, p. 2). Yukl (2010) noted that a critical limitation in the current practice of developing leadership competencies in organizations is the lack of a *systems perspective* that recognizes that behaviors and competencies of leaders are affected by numerous factors, further stating: "leadership processes are less effective if development is focused on the individual leaders rather than on the collective leadership provided by many members of the organization" (pp. 484-485). Day (2001) remarked that organizations use a leadership development approach when they intend to build leadership capacity "in anticipation of unforeseen challenges" (p. 582).

Scenario Planning

Within the context of the Cold War, the birth of a new military strategizing approach emerged in the USA (Kleiner, 2008). A renowned futurist and nuclear analyst, Herman Kahn, developed a methodology in the mid-1940's and early 1950's to "think the unthinkable" (Kahn, 1984, p. 17)—in order to convince leadership at the Pentagon to consider the devastating effects of a global thermonuclear war between the USA and the Soviet Union. Kahn used scenario stories to carry his persuasive argument for nuclear deterrence (Kahn, 1984; Kahn & Wiener, 1967).

Kahn's methodology was later adapted in the 1970s by scenario planners led by Pierre Wack to thwart financial disaster for Royal Dutch Shell (Wack, 1985a, 1985b). The pedigree of many successful scenario planners such as Pierre Wack, Ted Newland, and Peter Schwartz can be traced to their work at Shell (van der Merwe, 2008). Through the use of scenario planning, several plausible stories about the future are socially

constructed by the participants—yielding an increased knowledge of their internal and external environment, predetermined events and driving forces (Wright, 2005).

Chermack (2011) noted that scenario planning has been utilized within organizational contexts over the past three decades for a variety of reasons such as considering natural and man-made disasters like Hurricane Katrina, and the terrorist attacks of September 11th. Further, van der Merwe (2008) reported that scenario planning has been used for a myriad of purposes including improving decision making, policy alignment, opening a community dialogue, organization alignment, and stimulating inquiry for personal strategy.

Although a process long in use by practitioners, the first actual theory of scenario planning was developed by Chermack in 2003, and revisited and refined in 2011. Key drivers identified in the theory were learning, conversation quality and engagement, mental models, decision making, and leadership (see also Visser & Chermack, 2009). The ability to respond to change (performance improvement) was offered as an outcome of the scenario planning system. The usefulness of Chermack's theory of scenario planning is that it makes process drivers and outcomes explicit and subsequently comparable to those associated with leadership capability and capacity (see McWhorter, Lynham & Porter, 2008).

Although there are numerous definitions offered for scenario planning, this inquiry drew on the work of Chermack (2007) who defined scenario planning as "a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of

changing current thinking, improving decision making, enhancing human and organization learning, and improving performance" (p. 2). Also informative to this inquiry was an *Advances in Developing Human Resources* journal Issue (2008) devoted to examining scenario planning from the perspective of the field of HRD. It was in this journal issue that scenario planning was first linked *explicitly* through empirical evidence, not only with leadership but with leadership capability and capacity development.

Scenario Planning as the Development of Leadership Capability and Capacity

In the informing literatures we found a perceived association between the development of leadership capability and capacity and scenario planning. For instance, van der Heijden et al. (2002) captured the notion of scenario planning as a facilitator for building leadership capability and capacity: "Scenario Planning as Leadership Tool…top management use scenarios to provide leadership to the organization" (p. 8) describing how Shell Oil has a long history (continuing today) of involving more than just top management in scenario planning. Rather, they involve multiple levels of employees to develop "scenario thinking" (p. 9) for improved decision making throughout the organization.

Also, in 2004 and 2005, Volckmann wrote a series of essays where he posited scenario planning as an organizational strategy for the development of leaders as well as the development of the leadership capacity of organizations. He conjured that leadership develops through the extensive examination of internal and external forces within the

scenario planning process. Further, he described how the scenario planning process employed for leadership development might look:

> Rather than doing this in a one-shot workshop, this [scenario planning for leadership development] method could be made a part of an ongoing developmental process in an internal training and development program in companies or as the heart of a leadership development institute that brings together a group of executives for a yearlong process. Both could include coaching and developmental homework between scenarios and training sessions. The scenarios need not be complex. Life conditions already familiar are complex enough as a setting for a scenario. The scenario unfolds as the result of postulating an event or a series of events that could happen, that are feasible (¶10).

In this same vein, a research team, including some of the authors of this article, began a series of successive studies exploring the perceived association (and thus overlap) between scenario planning and the development of leadership capability and capacity (See Table 6). The first round of our study resulted in the construction of an *integrative heuristic*, composed of scenario planning process and outcome components contrasted with four components and corresponding characteristics of leadership. This heuristic proved useful for gathering further evidence for this perceived association (See McWhorter, Porter, Lynham, & Chermack, 2007), and for the subsequent rounds of inquiry. In the second round of inquiry, McWhorter, Lynham and Porter (2008)

investigated this perceived association by applying the *integrative heuristic* to gather additional data. As a result, the heuristic was renamed to that of a *synthesis model*.

In the third round of inquiry (see Table 6), we proposed the construct of *scenario-based leadership* (SBL) as representing the integration of (1) scenario planning and (2) leadership capability and capacity development (See McWhorter, Porter, Lynham, Chermack & van der Merwe, 2007). Findings and implications included further refinement of our *synthesis model* intended for use in later investigations and theorizing on the construct of SBL (McWhorter, Porter, Lynham, Chermack & van der Merwe, 2007).

Through the successive gathering and examination of expert-practitioner interviews, relevant literature, published scenario planning reports, and university programs espousing the use of scenario planning activities for the purpose of leadership development (see Table 4), we affirmed increased confidence in the associative relationship between scenario planning and the development of leadership capability and capacity.

Methods

Because scenario planning is a process replete with social constructions (Wright, 2005), we chose the social constructivist approach (Lincoln & Guba, 1985) to further investigate the hypothesized association between scenario planning and the development of leadership capability and capacity due to its likelihood to inform data gathering aimed at illuminating this association further (Lincoln & Guba, 1985). Naturalistic inquiry

methods used conducting five semi-structured, purposive interviews, and locating and analyzing five published scenario planning reports.

Participant Selection

The five interview participants in this study were selected through purposive snowball sampling. We purposively chose five expert-practitioners skilled in both scenario planning and leadership development (Denzin & Lincoln, 2005; Erlandson, Harris, Skipper & Allen, 1993; Lincoln & Guba, 1985) to capture their lived experiences around the topic under investigation. The demographics of the five participants represented expert-practitioners from three continents (North America, Africa, and Europe).

Data Collection

Data were collected from two sources: one primary and consisting of five semi-structured interviews with expert-practitioners; and one secondary and consisted of a sample of five published scenario planning reports produced from the conduct of scenario planning in organizational settings. These reports were obtained by locating published scenario planning activities available on the Internet and in publicly accessible journals and books. Purposeful sampling was utilized to locate scenario reports that documented typical cases of scenario planning within both the private and public sectors (Lincoln & Guba, 1985).

Data Analysis

The *synthesis model* (initially called the *integrative heuristic*) resulting from the 2008 study (McWhorter, Lynham & Porter) was used to sort and organize the

information gathered from the primary (interviews) and secondary data sources (published scenario reports). The data obtained from these sources were analyzed and synthesized using the constant comparative method (see Glaser & Strauss, 1967) adapted by Lincoln and Guba (1985). Using this method, data were separated into a unit (the smallest piece of data that can stand by itself) and placed on single data cards, and then systematically categorized, coded, and themed against the respective process and outcome components of the *synthesis model*.

Trustworthiness and Authenticity Criteria

Trustworthiness refers to the methodological and methods decisions of a study such that the study is conducted in a way that satisfies the methodological issues and requirements. According to Lincoln and Guba (1985), several measures can be used to enhance the trustworthiness and credibility of a qualitative inquiry. In the current study, these included the use of a *team of researchers*, conducting *replicability checks*, use of a *reflexive journal*, *audit trail*, and *member checking*. In addition, *triangulation* (the convergence among multiple sources of information to enhance credibility) was pursued by the research team (see Creswell & Miller, 2000; Lincoln & Guba, 1985). These sources included a review of relevant literature and both the primary and secondary source data by the researchers.

In addition, measures of *authenticity* were sought by the research team. *Authenticity* aims to ensure that practices in the conduct of inquiry are aligned with the paradigm in which the study is located. This study, reflects a constructivist paradigm, described by the following five metaphysical characteristics (Lincoln & Lynham, 2011;

Lincoln, Lynham & Guba, 2011): ontology, epistemology, methodology, axiology, and teleology discussed next.

Ontology. (the nature of the knowable, the reality) is that of "relativist…in form(s) of multiple mental constructions, socially and experientially based…dependent in their form on the persons who hold them" (Guba & Lincoln, 1990, p. 27 cited in Lincoln & Lynham, 2011, p. 6).

Epistemology. (The nature of the relationship between the inquirer and the known) is that of "Subjectivist – '. . .inquirer and inquired into are fused into a single entity, meaning that people construct their own reality, based upon their interactions with their surroundings and others. Findings are therefore cocreated from the process of interaction between the two'" (Guba & Lincoln, 1990, p. 27 cited in Lincoln & Lynham, 2011, p. 6).

Methodology. (How the knower should go about finding out knowledge) is that of "Hermeneutic, dialectic where '. . .individual constructions are elicited and refined hermeneutically, and compared and contrasted dialectically' (Guba & Lincoln,1990, p. 27) for the purpose of transformed action, policy and practice" (Lincoln & Lynham, 2011, p. 7).

Axiology. (The values that should guide the choices made by the researcher/s in selection, conduct, and dissemination of inquiry and its outcomes). "Passionate participant… propositional, transactional knowing is instrumentally valuable as a means to social emancipation, which is an end in itself, and taken to be intrinsically valuable' (Guba & Lincoln, 2005, p. 198 cited in Lincoln & Lynham, 2011, p. 7).

Teleology. (The end to which the knowledge gained through inquiry ought to be applied). "Improved praxis – 'To make sense of, understand and interpret. To understand and interpret through meaning of phenomena (obtained from the joint construction/reconstruction of meaning of lived experience); such understanding is sought to inform praxis (improved practice)'" (Guba & Lincoln 2005, p. 194 cited in Lincoln & Lynham, 2011).

Limitations to the Study

The researchers obtained permission through their institutional review board (IRB) and the participants to make an audio recording of the interviews for use in transcribing verbatim the responses from the participant. However, on one of the five interviews, extensive field notes were utilized instead of an audio recording due to a technology malfunction.

Also, since our expert-practitioners are facilitators of scenario planning, they offered their lived experienced from this perspective. However, the scenario planning participant perspective is not represented in this study except through secondary observation and interpretation by the expert-practitioners. This study is limited by the numbers of expert-practitioners and no participants yet; the study is still in exploratory phase.

Having outlined the methods of the current study, the following section presents three sets of findings resulting from the study, and a brief of each.

Findings and Discussion

Three discernible sets of findings are evidenced in this study. The first is based on the sixteen themes that emerged/resulted from the five expert-practitioner interviews, and which underscores the *implicit* (as in tacit) nature of the hypothesized relationship of scenario planning and the development of leadership capability and capacity. The second, presented in Table 2 integrates the *synthesis model* from the second of inquiry (McWhorter, Lynham & Porter, 2008) with the outcomes of this current study, thereby providing further cumulating evidence for and confirmation of the findings from our previous studies. The third set of findings provides support from published scenario planning reports for the expert-practitioner interview data and therefore for the process and outcome components of scenario planning (represented by the Y axis of the *Synthesis Model*). Each set of findings is discussed next.

The First Set of Findings: Implicit Nature of the Association between Scenario Planning and the Development of Leadership Capability and Capacity

Sixteen themes were analyzed and synthesized from five expert-practitioner interviews. Together these themes, highlighted one salient concept: the *implicit* (as in tacit) nature of this association between scenario planning and the development of leadership capability and capacity. Specific participant extracts to this effect follow.

One expert noted that the overlap between scenario planning and leadership development "has not explicitly occurred to people" (IP01, p. 2). This same expert gave an illustration of the implicit nature of this association when a client contacted their firm to schedule a leadership development program remarking that they were specifically

interested in "scenario-based strategy", meaning the scenario planning work the expert facilitated (p. 3).

Another expert-practitioner commented that scenario planning is used because it is a useful device for clarification such that we get a selection of "possible powerful memories of the future. And I think that in terms of leadership, there is a notion of leadership which is the difference between being able to clarify complexity to create clarity" (IP04, p. 6).

A third expert-practitioner related: "The scenario process, almost by accident, has been a vehicle for building leadership capability…it has not been made explicit or it just never occurred to people" (IP05, pp. 3-4). These extracts demonstrate that several expert-practitioners agree that there is indeed an association between the two constructs, but that it is currently more tacit than explicit. When asked about this tacit nature of association, one expert indicated that it would have been very frightening two decades ago if scenario planners had told leaders that they wanted to "change the way you [leaders] think and we are going to develop your capacity as leaders" (IP05, p. 6). This remark indicates that making this association explicit would not have been well received, and suggests that utilizing scenario planning to increase leadership capability for strategic advantage in a complex world is a relatively new concept in the literature.

The Second Set of Findings: Support for the Synthesis Model from Interview Data and Scenario Planning Published Reports

The second round of inquiry (see Table 6; McWhorter, Lynham & Porter, 2008) yielded a *synthesis model*, called *integrative heuristic*, which was adapted to illustrate

the findings of the first three rounds (identified by 1, 2, and 3 respectively in Table 7) as well as findings from this current and fourth inquiry (indicated by 4 in Table 7).

Table 7: Synthesis Model—The Associative Relationship between Scenario Planning and the Development of Leadership Capability and Capacity Underscored in Four Iterations of Inquiry

		Categories, **Components** and **Characteristics**			
		Three **Categories** of Leadership in OilCo Model			
		Being (Essence)	Doing (Process)	Having (Outcome)	
		Four **Components** and Corresponding **Characteristics** of Leadership			
Processes and **Outcome** Components of Scenario Planning (SP)		**PERSONAL QUALITIES** [Characteristics: commitment to the truth, courage, compassion, humility, authenticity, integrity]	**LEADERSHIP RESPONSIBILITIES** [Characteristics: building shared vision, creating capacity to act, think systemically, communication through open and honest dialogue, … as a coach, mentor, and teacher]	**CORE VALUES** [Characteristics: belief in people, trustworthiness, excellence, innovation, sense of urgency]	**PREMIER RESULTS** [Characteristics: organizational and personal transformation, business performance, individual and organizational capability]
Process Components of SP	How to have and hold strategic conversations, continuously	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	How to make explicit and develop shared mental models and values	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	Development of awareness sensitivity for organizational and environmental dynamics and how to think and act systematically within those environs	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	How to order perceptions about alternative future environments and 'think the unthinkable'	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	How to learn collectively and Institutionally	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	How to develop, track and select future options (direction)	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	Development of a capacity for leadership, and strategy development and implementation	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
	How to achieve alignment of thought and action, within the organization as a whole	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	
Outcome Components of SP	Increased capacity to learn—faster, deeper, individually, collectively and organizationally	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
	Ability to think and act systemically	1, 2, 3, 4			1, 2, 3, 4
	Improved decision-making capability	1, 2, 3, 4			1, 2, 3, 4
	Increased awareness of customer requests and needs	1, 2, 3, 4			1, 2, 3, 4
	Improved organizational performance	1, 2, 3, 4			1, 2, 3, 4
	Increased cross-functional communication and teamwork	2, 3, 4		1, 2, 3, 4	1, 2, 3, 4

(Continued)

Table 7: Continued

Processes and **Outcome** Components of Scenario Planning (SP)		**Categories**, **Components** and **Characteristics**			
		Three **Categories** of Leadership in OilCo Model			
		Being (Essence)	Doing (Process)	Having (Outcome)	
		Four **Components** and Corresponding **Characteristics** of Leadership			
		PERSONAL QUALITIES [Characteristics: commitment to the truth, courage, compassion, humility, authenticity, integrity]	**LEADERSHIP RESPONSIBILITIES** [Characteristics: building shared vision, creating capacity to act, think systemically, communication through open and honest dialogue, … as a coach, mentor, and teacher]	**CORE VALUES** [Characteristics: belief in people, trustworthiness, excellence, innovation, sense of urgency]	**PREMIER RESULTS** [Characteristics: organizational and personal transformation, business performance, individual and organizational capability]
Outcome Components of SP	Increased clarity of strategic options	2, 3, 4	1, 4	1, 2, 3, 4	
	Increased ability to act and lead teams/projects	2, 3, 4	1, 4		1, 2, 3, 4
	Increased strategic thinking and planning ability	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
	Ability to create vision and enroll others to its enactment [shared vision]	2, 3, 4	4	2, 3, 4	
	Regarding diversity of viewpoint as strength*	3, 4	3, 4	3, 4	3, 4
	Responsibleness in conserving human and environmental resources*	3, 4	3, 4	3, 4	3, 4

1= Evidenced in first iteration of this line of inquiry (See McWhorter, Porter, Lynham, & Chermack, 2007)
2= Evidenced in second iteration of this line of inquiry (See McWhorter, Lynham & Porter, 2008)
3= Evidenced in third iteration of this line of inquiry (See McWhorter, Porter, Lynham, Chermack, & van der Merwe, 2007)
4= Evidenced in current study
*=Note: Outcome Components added to the model following findings in Iteration #3

This current set of findings (illustrated in Table 7 above) provides confirmation of our earlier findings and more confidence in the *synthesis model* and the hypothesized association between scenario planning and the development of leadership capability and capacity. The next set of findings integrates the interviews with the five expert-practitioners. Five selected process components and four selected outcome components of scenario planning from the Y-Axis of the *synthesis model* (see model in Table 7).

The Third Set of Findings: Supportive Evidence from Expert-Practitioner Interview Data and Published Scenario Projects for the Process and Outcome Components of SP as the Development of Leadership Capability and Capacity (the Y Axis of the Synthesis Model)

Extracts from expert-practitioner interviews that illuminate and support selected *process* components associated with the development of leadership capability and capacity (named on the Y-axis of Table 7) are presented in Table 8, below.

Table 8: Supportive Evidence from Expert Interview Data for the Process Components of Scenario Planning, the Y-Axis of the Synthesis Model

Selected Process Components of Scenario Planning	Supportive Data Extracts from Expert Interviews
How to have and hold strategic conversations, continuously	"They [scenarios] provide a space in which it's okay to have disagreements and they contribute a vocabulary that enables the strategic conversation" (IP04, p. 7) [In scenario planning], "you are engaged in the strategic conversation…which is always the most difficult kind of conversation to have" (IP01, p. 3) [Scenario planning] "enables communication through open and honest dialogue" (IP01, p. 3)
How to make explicit and develop shared mental models and values	"Scenario planning creates visions that are shared, that are acted upon, and can change the world. Individuals will step up when it becomes a distributed shared leadership" (IP02, p. 3) "I think it [leadership] rests in a lot of people and I think that the reason that scenarios are so fundamental in that is because they provide a safe space for disagreement" (IP04, p. 2)

(Continued)

Table 8: Continued

Selected Process Components of Scenario Planning	Supportive Data Extracts from Expert Interviews
Development of awareness sensitivity for organizational and environmental dynamics and how to think and act systematically within those environs.	"But we know that social challenges, the issues that we face in the real world, are not about natural science. That they are wicked, socially messy problems and if we do it in one place and if it doesn't work, there is no repeat of the experiment. You cannot build a city, take it down and then see if you can build it another way." (IP04, p. 7)
How to order perceptions about alternative future environments and "think the unthinkable"	"One of the capacities for leadership is to think the unthinkable…and that's the whole [scenario planning] methodology as developed in the Pentagon" (IP01, p. 5) "If leaders believe there is a reason to lead, and develop a strong knowledge base of environmental trends it enables others to see and think of places where they wouldn't have otherwise gone" (IP02, p. 4)
How to learn collectively and Institutionally [process of collective and institutional learning]	"The scenarios had become embedded within the strategic architecture of the university" (IP03, p. 8) "We came back to the scenarios for several years…and they chose to invite the same scenario planner to return to the organization to refresh the process" (IP03, pp. 8-9)

In addition to the above, various extracts from five expert-practitioner interviews and five published scenario planning reports illuminate, describe and support selected *outcome* components of scenario planning associated with the development of leadership capability and capacity (named on the Y-axis of Table 7). These results are highlighted and are discussed next.

Ability to think and act systemically. This scenario process component is supported by an expert-practitioner who commented that in scenario planning the facilitator teaches the participants to look "at the dynamics in the external world from events, patterns …so that people learn naturally that the structural view of the world, or

systemic view of the world, is much more useful and helps, assists you, in making hypotheses about how the world might look like in the future" (IP01, p. 4). Further, "thinking systemically…is a dimension of leadership that gets developed by the scenario planning process" (IP01, p. 5). In addition, a published scenario planning report, *Learning 2025: Forging Pathways to the Future*, supports this scenario planning outcome component, too. According to the report, 50 education grant makers in the U.S.A. were introduced to scenario planning methods that utilized *systems thinking* that emphasized their need "to understand the whole [educational] system and the relationships between its parts…to uncover those aspects of the system with the greatest potential to change the system as a whole" (Grantmakers for Education, 2010, p. 16).

Increased cross-functional communication and teamwork. An expert-practitioner described how scenario planning can be used in a cross-functional team noting they can "use it as a team building exercise" (IP05, p. 4). Also, "scenario planning was used for community planning partnerships" (IP03, p. 1). This outcome component of scenario planning also resonated with the AIDS 2025 scenario planning activity described in their accompanying report, which remarked that the 50 participants who came together in the project were: "a diverse group… drawn from government, civil society and business representing a mix of competencies, national origins, gender, ages and cultures" (UNAIDS, 2005, ¶2).

Increased clarity of strategic options. An expert-practitioner described this scenario planning component: "Pierre Wack saw himself…as being the lead wolf in the wolf pack…saying 'my job is to see and to warn the pack of any dangers that are ahead"

(IP01, p. 3). And, "scenario planning produces strategic leadership" (IP01, p. 2). This outcome component is communicated in a published scenario planning activity examining how technology may continue to shape life in developing nations in the future, namely, as "a provocative and engaging exploration of the role of technology and the future of globalization…crucial reading for anyone interested in creatively considering the multiple, divergent ways in which our world could evolve" (Rockefeller Foundation, 2010, p. 4) and "building the future-oriented mindset of participants" (p. 50).

Ability to create vision and enroll others to its enactment. An expert-practitioner remarked "scenario planning is important in terms of…managing the various factors and forces and variables that help you create the vision" (IP02, p. 3). Another noted that vision is one of the "dimensions of leadership that gets developed by the scenario planning process" (IP01, p. 5). This outcome component is also supported in a published scenario planning activity on the future of critical care medicine: each of the scenario teams "developed its own language for the vision of the future of critical care" (VHA, 2004, p. 41); and that establishing and working off a shared vision "catalyzed dialogue and creativity among all three teams and the rest of the core elements flowed from it" (p. 41).

Building on our three earlier rounds of study into the hypothesized association between scenario planning and the development of leadership capability and capacity (See Table 6), this fourth round provided triangulation of data and continued support for

our *synthesis model* (see Table 7). The implications of the resulting three sets of findings for research, theory, and practice are considered next.

Implications of Findings

Three sets of findings address the first three research questions of this inquiry. Specifically, those from Sets 1, 2 and 3 enabled us to answer Research Question 1, namely: *Based on expert-practitioner perceptions and published SP projects, what is the perceived association, if any, between Scenario Planning and the Development of Leadership Capability and Capacity?* And, Set 2 (see Table 7) and Set 3 (see Table 8) allowed us to answer Research Question 2, namely: *Based on expert-practitioner perceptions and published SP projects, what components of the process of SP are perceived to be compellingly associated with the Development of Leadership Capability and Capacity?,* while Set 3 allowed us to answer Research Question 3: *Based on expert-practitioner perceptions and published SP projects, what outcomes of SP are perceived to be compellingly associated with Development of Leadership Capability and Capacity?* When considered together, these three sets of findings answer Research Question 4, namely: *Based on expert-practitioner perceptions and published SP projects, what appears to be the nature of the emerging construct of scenario-based leadership?* These findings lend nascent confidence in the *synthesis model* as a reasonably trustworthy proxy for the hypothesized association between scenario planning and the development of leadership capability and capacity. Recognizing that our inquiry into the hypothesized relationship between scenario planning and the development of leadership capability and capacity has, to date, been of an exploratory

nature, the implications of our findings and concomitant working hypotheses (Lincoln & Guba, 1985), are considered next.

Implications of Findings for Future Theory

A number of implications may be drawn from the findings of this inquiry. These implications inform further working hypotheses for future inquiry and practice that is the focus of this article. First, this cumulating inquiry is sufficient to begin to use for informing the identification of theoretical units (Lynham, 2002) of a grounded theory of leadership (Charmaz, 2006; Lincoln & Guba, 1985) of the phenomenon of *scenario-based leadership* (SBL), thereby informing a working hypothesis, WH#1: The outcomes of the exploratory inquiry can be used to inform the naming and description of the units that might constitute a theory of SBL. Similarly, a second working hypothesis can be developed: WH#2: The outcomes of the exploratory inquiry can be used to aid the development of a theory of SBL by informing the description of what the phenomenon is, how it works in the real world, why, and where (Whetten, 2002).

Implications of Findings for Future Research

Further, this study, the fourth in an exploratory series by the authors, illuminates the hypothesized association between scenario planning and the development of leadership capability and capacity through the analysis of expert-practitioner interviews and published scenario planning reports. Additional rounds of inquiry to include those perspectives of different stakeholders such as scenario planning participants is likely to further bolster confidence in the *synthesis model*. A resulting working hypothesis might be: WH#3: The *synthesis model* of scenario planning and the development of leadership

capability and capacity can be used as a heuristic for purposeful evaluation of scenario planning endeavors.

Implications of Findings for Future Practice

The findings from this inquiry informs practitioners, namely, that they should could consider utilizing scenario planning efforts for developing leadership capability and capacity concomitantly rather than as separate endeavors thereby realizing substantial savings for organizations.

Scenario planning can be used for many purposes, the development of leadership capability and capacity being just one of these. However, this leadership development goal/purpose is not yet explicitly espoused in the scenario planning literature, and ought to be. The resulting working hypothesis (WH#5): The outcomes of the exploratory inquiry can be used to include the development of leadership capability and capacity as a goal of scenario planning.

Conclusions

This inquiry, to date, has been exploratory and is clearly of an emergent nature. An important next step is to extend it to field-based data including other stakeholders' perspectives such as from scenario planning participants. Doing so will continue to inform the trustworthiness of the *synthesis model* and enable testing of the model from multiple inquiry paradigmatic perspectives.

Our next challenge is to extend this inquiry to field-based data with other stakeholders such as scenario planning participants, allowing the testing of components of the *synthesis model* to more rigorously measure the hypothesized association.

One of the expert-practitioner participants notes that "if somebody were to take on the challenge of designing real leadership development [into scenario planning], there would be an awful lot that they could draw upon" (IP05, p. 71). This notion, that leadership development has not been explicitly recognized by scenario planners as inherent in not only the outcomes of scenario planning but also its processes, points to an explicit need to design leadership capability and capacity scenario planning. This notion of "designing in" the development of leadership capability and capacity to scenario planning is echoed by Chermack (2011): "perhaps in the near future, scenario projects can be designed specifically as leadership development activities" (p. 53), underscoring the need for continued inquiry, of both rigor and relevance, of *scenario-based leadership* and *scenario-based development of leadership capability and capacity.*

CHAPTER IV

EXPLORING THE EMERGENCE OF VIRTUAL HUMAN RESOURCE DEVELOPMENT*

Synopsis

Consider the impact of contemporary technology on your personal and professional life by reflecting on these questions: How often do you communicate with colleagues through information and communication technologies (ICT) such as email, texting, chat, video, and audio conference calls? Do you engage in meetings or meetups" that occur through social networking platforms such as Facebook™, LinkedIn™, or possibly through a meeting of avatars in a 3D virtual world such as SecondLife™? Do you search online or through your organization's intranet for your calendar appointments? Do you use Google® to search for terms, to seek expert advice, or access MapQuest™ or Yahoo™ to obtain directions, documents, or travel itineraries? What ways have you engaged to connect with colleagues that are in a different location, country, or time zone from you? Are you blogging, wikiing, twittering, or following web discussion forums? How much are modern technologies permeating your personal and professional life?

Technology is embedded in our everyday lives. Advanced technologies have enabled the field of human resource development (HRD) to engage in virtual activities

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that were unimaginable 15 years ago, moving the field into a new realm. Global interconnectivity impacts individuals, groups, and organizations to a degree unprecedented in the history of civilization (Bingham & Conner, 2010). Emailing, faxing, telephony, and virtual chatting have now surpassed traditional postal mailings for written communication; and technology-enabled environments are replacing many face-to-face interactions in educational and organizational settings (Yelon, 2006). The question the field must ask is whether we are in the midst of a paradigm shift that will fundamentally alter the way we develop people and organizations in the future.

The vast array of virtual technologies available to the modern worker is amazing and sometimes dizzying when one looks at the totality of tools and options for virtual communication and connection. This array compels the field of HRD to expand the boundaries of research and practice to develop greater understanding of technology-mediated work, learning, and development that are strategic and innovative. It also drives HRD to create a compelling vision for VHRD, which is emerging as a new construct.

This issue of *Advances* offers an inaugural discussion of the construct of VHRD. The purpose of this article is threefold: to introduce VHRD as an emerging construct, to identify the enabling technologies that have built a platform for VHRD, and to provide an overview of articles in this issue. To begin this journey, we will first take a look at recent conceptualizations of VHRD that are formalizing the construct.

VHRD as an Emerging Construct

VHRD has emerged as a new area of inquiry in the field of HRD, based on a growing interest for integrating technology into HRD practice and research. Built on a growing body of literature in HRD, parallel tracks have converged to offer initial conceptualizations for formalizing VHRD. The term VHRD was presented by McWhorter, Mancuso, and Hurt (2008) in an innovative session at the 2008 Academy of Human Resource Development (AHRD) Conference in the Americas. In the context of adult learning, they reviewed enabling technologies for developing human expertise within technology-enabled environments.

In 2007, Bennett reported results of an empirical study of organizational culture and intranet technology. She concluded that a culturally relevant intranet enables virtual human resources, both human resource management (HRM) and development (HRD). The study formed the basis for Bennett's (2009) definition of VHRD as "a media-rich and culturally relevant web[bed] environment that strategically improves expertise, performance, innovation, and community building through formal and informal learning" (p. 364), which emphasized the new virtual environment created by VHRD.

The parallel tracks have converged to provide initial structure and support for VHRD as a construct; however, the field has been adopting virtual technologies for some time. The emergence of VHRD would not be possible without many scholars in the field integrating and studying cutting-edge technology. VHRD is built on a platform of enabling technologies, which are described in the next section.

Enabling Technologies for the Emergence of VHRD

A look back at the past two decades reveals an accelerated rate of change for technology that can be characterized by three distinct phases. Inspired by Kapp and O'Driscoll's (2010a) conceptualizations of waves of Internet connectivity, this section identifies three distinct phases of AHRD literature that demonstrate people connecting *to*, connecting *through*, and connecting *within* technology (See Figure 2). Each phase shows increasing technology sophistication and a greater ability to simulate real-life connections and collaboration. This framework is useful for examining the connectivity between individuals, groups, and organizations with modern technologies.

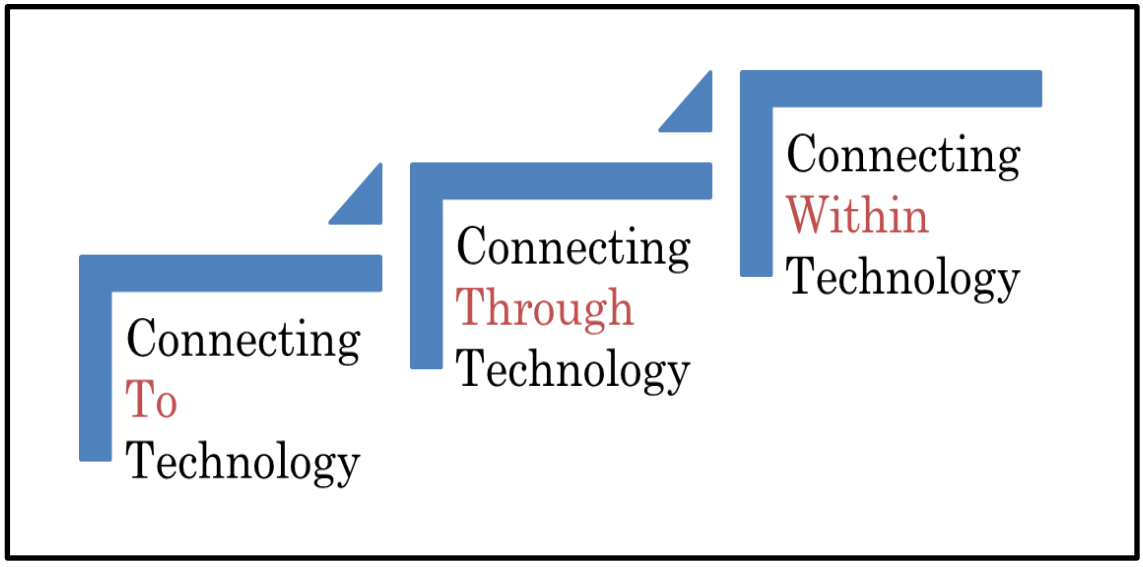

Figure 2: Enabling Technologies for the Emergence of Virtual HRD

Adapted from Kapp and O'Driscoll (2010a), McWhorter (2010)

Connecting to Technology

Once information technology (IT) became more commonplace in organizations, the early discussions in AHRD literature reflected how employees connected within the

context of work, how work was changing due to microcomputers (in both home and work environments), the need to train on these new tools, and discussions of the potential that technology held for the transformation of HRD processes. These early connections can be characterized as "one-way" connections (see Kapp & O'Driscoll, 2010a) that connect people to personal computers (PCs) and other digital tools. The discussion in HRD mirrored the level of technology during this phase, including the nuances of the microcomputer software and simple web browsers of that era.

During this time, the term *knowledge worker* began to appear in the literature. For instance, Nickols (1990) poignantly described himself as a knowledge worker in his home office where connecting to a new PC was a superior replacement for his beloved typewriter. Knowledge work seemed to be more recognizable due to the tools available with microcomputers.

Research studies began to populate (but not overwhelm) the AHRD literature. A study by Ford (1990), for instance, described how PC training was becoming integral to the productivity of organizations, and he identified positive results obtained when an organization's culture was connected to technology usage. McClernon and Swanson (1995) also studied a computer-supported team intervention and found that the technology seemed to lessen the effects of dominant personalities in a team and promote informal leadership.

Russ-Eft (1994) provided a historical review of technology during this phase, and she made an interesting prediction about technology use in HRD, "the true gain may not be reaped until 1999 or 2009" (p. 211). The next phase is characterized by a leap in

technical sophistication that does indeed reap greater benefits for HRD as people began connecting through technology.

Connecting Through Technology

As more sophisticated technology tools became available to the public, there was a dramatic change in the way technology was used. In this phase, technology evolved from one-way access-only connections to two-way communications used for sharing, collaborating, and participating through the technology tools of Web 2.0 (Kapp & O'Driscoll, 2010a). Web 2.0 tools have been described as "enabler[s] of a culture that supports co-construction, collaboration, communication, interaction, participation, and sharing" (Demps, 2010, pp. 9-10), such as the collaborative-building platform of Wikipedia™, user-generated videos posted on YouTube™, and knowledge sharing on wikis and blogs.

In this second phase, HRD researchers began positing web-based technologies as a driving force in the field. In 2002, Benson, Johnson, and Kuchinke (2002) offered a framework to capture information technology tools in the digital workplace (see also Aragon & Johnson, 2002; Swanson, 2002). Building on this framework, Bastiaens (2009) described how ICT enabled the advent of the *virtual organization* by leveraging ICT to accomplish work tasks becoming more "*virtual"* (p. 436).

The word *virtual* was introduced in this phase of connecting to technology to describe nascent concepts of collaboration through technology. For example, *virtual teams* were composed of workers connecting remotely to carry out an objective or purpose (Dewey & Carter, 2003; Johnson & Jeris, 2004; Moran, 2005; van Reine &

Trompenaars, 2000; Workman, 2005) who then formed *virtual communities of practice* (VCoPs) organized around community members' common interests (Calvin, Stein, & Wheaton, 2004; Gibb, 2004; Lien, Hung, & McLean, 2007) where new technologies facilitated the cocreation of knowledge around a specific topic (Ardichvili, 2008).

Also, *virtual mentoring* described the relationship between mentor and protégé who connected through the use of advancing technology (Bierema & Hill, 2005) to foster a "deliberative, reflective, and thoughtful exchange" (p. 559). Professionals formed *virtual learning communities* (VLCs) to gain knowledge from one another through active participation in threaded discussions, chats, and conferences (Bassi, 1998; Birchall & Giambona, 2007), and VLCs were also used "in house" to facilitate the exchange of formal and informal knowledge.

The sophistication of technology has now developed to a new level with the advent of the immersive technologies that allow people to connect *within* the technology, not just *through*. It is in this phase that we see an explosion of AHRD literature, suggesting that technology is far more value-added as its sophistication level increases.

Connecting Within Technology

New technologies are moving from two-dimensional web browsers to three-dimensional, immersive spaces where cocreation and advanced collaborative efforts are underway (Kapp & O'Driscoll, 2010a). These powerful tools allow users to cocreate in *real-time* (at the same time). For instance, "mixed reality events" (Gronstedt, 2008, p. 5) connect employees across multiple locations to employees participating within 3D

virtual worlds. These participants gather together and cohabit the same virtual space holding organization-relevant conversations and organization-wide training and events.

Chapman (2008) defined a 3D virtual world as "a three-dimensional world where multiple people can interact in real-time while using avatars (virtual icons) as representations of themselves" (p. 917). She found five areas in her research on virtual worlds that should be explored by HRD professionals: education, training, community building, career development, and further research. Furthermore, McWhorter, Mancuso, Chlup, and Demps (2009) posited that interactions in immersive virtual spaces were often quite different than face-to-face interactions. They called for further research on the *skill set* required of HRD professionals when operating in virtual environments.

Other issues surrounding virtual worlds are relevant to our discussion of VHRD. Crites and Homan (2009) challenged educators to explore virtual worlds for their potential to offer students new, exciting, and novel ways for collaboration. However, higher education is not the only venue for virtual worlds; 3D virtual worlds offer new opportunities for training virtual teams, virtual mentoring, and virtual organizations in real-time and facilitate social presence (the feeling of being in the same geographical location). For example, documented 3D trainings in virtual worlds (through an avatar) include border guard simulations, employee training of safety procedures, medical training simulations at virtual hospitals, disaster preparedness simulations, mock interviewing for students, leadership development activities, and other novel ways to leverage immersive spaces (see Gronstedt Group, 2010).

Virtual worlds are not the only platform where we should be looking for VHRD.

Sophisticated intranets and possibly even modern mobile technologies allow users to create a media-rich environment for the work of VHRD. The current phase is characterized by the integration of several technologies (such as voice, text, video, and graphical media) into one platform, thereby creating media-richness for VHRD.

These new spaces are being cohabited and customized by its users (Kapp & O'Driscoll, 2010a). It is within these integrated and sophisticated spaces that VHRD is emerging.

Overview of This Issue

In the Foreword, Darren Short provides several compelling thoughts and provocative questions about how VHRD may transform practice. The articles in this issue explore the emerging construct of VHRD from a number of perspectives. They are arranged in four parts: Foundational, Empirical, Design, and Synthesis.

Foundational

Two articles in this section are foundational to the study of VHRD. The first of those is one written by Elisabeth "Liz" Bennett and Laura Bierema who examined the macro perspective of VHRD and where it fits within the field of HRD as well as virtual HR and virtual HRM. They also look critically at the issues surrounding VHRD and posit that VHRD is driving a paradigm shift in the field of HRD. In the second foundational article, Fred Nafukho, Carroll Graham, and Helen Muyia seek to demonstrate the role of VHRD through the lens of human capital theory and explore the calculation of costs associated with virtual technologies and offer numerous models for organizations to view their investment in VHRD.

Empirical

The next two articles are empirically-based. First, through a literature review and qualitative case study, Diane Chapman and Sophia Stone examine evaluation practices used in virtual worlds noting their increasing popularity as instructional spaces and offer new ways to assess learning. Second, Donna Mancuso, Dominique Chlup, and Rochell McWhorter report on a qualitative study of adult learning in the virtual world of Second Life™ and present enablers and barriers to adult learning offering suggestions for minimizing the barriers for learning in virtual environments.

Design

The two articles in the Design section cover varied approaches aimed at management of VHRD. First, Wen-Hao David Huang, Seung-Hyun Han, Un-Yeong Park, and Jungmin Jamie Seo offer an original design for a game-based performance system for monitoring employee performance. Second, Seung Woon Yoon and Doo Hun Lim suggest ways to improve the effectiveness of employee learning, development, and performance by purposefully incorporating technologies.

Synthesis and Future Directions

This issue concludes with Elisabeth "Liz" Bennett exploring the trends in VHRD across the articles in this inaugural issue. She reaffirms the field's commitment to the human side of HRD, especially as other fields seem to delve into VHRD. Her article includes a heuristic for organizational learning transfer, and she identifies important research questions that can be addressed in future studies of VHRD.

Summary

In 1999, the computer visionary, Bill Gates, foretold that technology would transform and redefine organizations in real-time and empower employees by "stimulating their creativity and productivity" (p.411). More than a decade later, technology has not only permeated our lives, but in many cases, it has transformed workplaces from physical spaces into virtual environments (Chalofsky, 2010).

This article has overviewed the enabling technologies that have paved the way for VHRD. As people have connected to, through, and within technology, it has become more representative of real-time human communication and interaction. It has also compelled researchers and scholars within the field of HRD to consider the impact and integration of technology with regard to the emergence of VHRD as well as practice-based implications before this emergent construct and territory is claimed by other fields. Therefore, I extend the invitation to you to read the following articles that add dimension to the discussion and expand upon the possibilities of VHRD and answer for yourself if VHRD is a coming paradigm shift for the field of HRD.

CHAPTER V

A STUDY OF ADULT LEARNING IN A VIRTUAL WORLD*

Synopsis

It is crucial that employees and students become astute adult learners. Due to rapidly changing technology in both the workplace and instructional venues, organizations are challenged to find new and useful tools for adapting to these advances in both content and processes of work. Therefore, understanding how virtual worlds function as sites of adult learning (including enablers and barriers to successful adult learning experiences) becomes an important task for developing the construct of virtual human resource development (VHRD). In this empirical exploratory study, adult learning was conducted within the virtual world of Second Life (SL), both for its popularity and its afforded opportunities for collaboration. The findings in this study indicate there are important enablers and barriers for adult learning in this virtual world that may prove useful for HRD professionals when designing learning experiences in virtual environments.

Introduction

Technology-mediated learning is a relatively new phenomenon in adult learning and is rapidly becoming a vital component of the current and future workplace. Interest in 3D virtual worlds has grown considerably for both individuals and organizations.

Virtual worlds are online communities in which users take the form of avatars (3D graphic representations) to interact with others in a computer-simulated environment. This new environment offers flexible learning spaces and has a growing value for adult learning (McWhorter, Mancuso, & Hurt, 2008; McWhorter, Mancuso, & Chlup, 2009; McWhorter, Mancuso, Chlup, & Demps, 2009). Many universities, private sector businesses, and public sector organizations have established locations in virtual worlds (New Media Consortium, 2008), and the field of human resource development (HRD) must now address their place in workplace learning and virtual HRD (VHRD).

The rapid expansion of 3D virtual worlds coupled with increasing global organizations and virtual teams has led scholars in the field of HRD to offer VHRD as a new construct. The value organizations place on knowledge and technology in the present economy is at the center of VHRD (Bennett, 2009). In defining VHRD, Bennett (2009) noted, "Although the field often emphasizes formal learning, such as in training, informal learning is embedded in the daily reality of work and is essential for organizational socialization and building expertise" (p. 365) punctuating that HRD considers adult learning central to its theory and practice (Knowles, Holton, & Swanson, 2005). The emphasis on adult learning is as important in VHRD as it is within traditional HRD.

Adult learning can refer to a multitude of categories—acquisition of skills, personal transformation, and empowerment of the collective (Fenwick, 2008). Furthermore, andragogy and adult learning are important components of the foundation of HRD (Hu, 2009), and facilitating learning for individuals and organizations is a

fundamental role for HRD professionals (Yang, 2003, 2004). Yet little is known about the individual experiences of adult learning in the context of a virtual world.

Earlier VHRD-related articles defined specific ways by which they were relevant to the field of HRD. For instance, a review of literature found virtual mentoring (Bierema & Hill, 2005), virtual teams (Workman, 2005), and virtual communities (Birchall & Giambona, 2007). In addition, Ardichvilli (2008) proposed a framework for understanding motivators, barriers, and enablers for successful online knowledge sharing and learning in virtual (online) communities of practice (VCoPs). McWhorter, Mancuso and Hurt (2008) emphasized andragogy in VHRD, and Bennett (2009) examined intersections of knowledge management, culture, and intranets to offer the conclusion that VHRD is not a panacea but rather an alternative construct of HRD that must be designed with care and purpose.

As VHRD grows both in practice and relevant research, it is important to consider what virtual environments offer the field. Johnson and Levine (2008) noted, "the core element in any virtual world is the ability for the visitor to interact with the environment—people, objects, and places—and to influence the course of events [in real time]" (p. 162).

It is the goal of this article to contribute to the understanding of how adults learn in a virtual world by exploring two research questions: (a) What are the *enablers* to learning for adults in a virtual world? and (b) What are the *barriers* to learning for adults in a virtual world?

This exploration is based on an empirical study conducted within the virtual world, Second Life (SL), an adult-only environment where numerous global and nonprofit organizations such as Cisco, The American Cancer Society, American Society for Training and Development (ASTD), and universities have a presence (NMC, 2008).

Significance of Inquiry

As technology and virtual worlds are becoming commonplace in many adults' everyday lives—whether for work, education, or personal pleasure—finding new and useful tools for incorporation into adult learning is of great importance to help meet adult learners' diverse learning styles. In addition, rapidly changing environments in both the workplace and instructional modes force employers and employees to be extremely adaptive to demands of continuously attaining updated skills for technological advances in both content and process of work (Akdere & Conceicão, 2006). Therefore, understanding how virtual worlds function as sites of adult learning and what the enablers and barriers are to successful learning in a virtual world becomes an important task for understanding complexities and potentialities of VHRD. Although this study was limited to a majority of participants who used SL, the authors will discuss implications for HRD professionals in other immersive environments used within organizational settings.

Conceptual Framework

Knowles (1989) posited technology as one of the major forces that would affect adult learning in the 21st century and he is corroborated by Fenwick (2008): "New technologies and environments have fundamentally changed what and how people learn

in work" (p. 18). Bold new opportunities are created as technology provides rich learning experiences for adults through self-directed learning (SDL) media (Knowles et al., 2005). Ellinger (2004) offered that learners in work organizations are increasingly being held responsible for their own learning; therefore, techniques and approaches of SDL are relevant in the context of HRD. The basic principle of SDL is the fundamental nature of virtual learning, and virtual environments offer specific technology that assists in the implementation of adult learning concepts (Zielke, Roome, & Krueger, 2009).

Therefore, our research is informed by the conceptual framework of andragogy as presented by Knowles (1970, 1973) and later expanded by Knowles et al. (2005). Based on the European concept of andragogy, meaning "the art and science of helping adults learn," Knowles (1968) proposed andragogy as a "new label and a new technology" to distinguish adult learning from pre-adult schooling (quoted in Merriam, Caffarella, & Baumgartner, 2007, p. 84). The six core assumptions included in the current andragogy in practice model include (a) Learner's Need to Know, (b) Self-Concept of the Learner, (c) Prior Experience of the Learner, (d) Readiness to Learn, (e) Orientation to Learning, and (f) Motivation to Learn (Knowles et al., 2005). Each of these principles or assumptions was considered in reviewing themes found in the results of this study.

Given the controversy and expansive critique of Knowles' model of assumptions (Sandlin, 2005; St. Clair, 2002), the researchers pay particular attention to St. Clair (2002) and Alfred (2002) who noted that the social and cultural contexts are shapers of adult learning including where and when learning occurs and how it is perceived. HRD

professionals and adult educators continue to "redefine and renegotiate" what the andragogical model is by "incorporating alternative identifiers, concepts, and theories" (Alfred, 2002, p. 9) into the sociocultural context.

Although andragogy serves as a conceptual framework informing our study, it is also informed by the perspective of contextual learning. In today's society, the historical and sociocultural context of adult learning is a key component in understanding the nature of adult learning; a shift occurred in adult learning from the individual learner's perspective to the focus of the learner in context (Merriam, 2008). Context is a broad concept referring to where the learner is situated concretely—as in the workplace or, for the purpose of our study, online in a virtual world—or socioculturally (Merriam, 2008). Exploring adult learning in a virtual world offers a new perspective in understanding the nature of adult learning as it contributes to the "emerging line of research in workplace learning [that] is literally context-based, as researchers consider how physical space and spatiality encourages or inhibits learning" (Merriam, 2008, p. 94).

Review of Literature

Few researchers have completed studies specifically examining adult learning in SL. A review of literature revealed the following. First, a study of how SL was used for a highly successful project-based graduate interdisciplinary communication course (Jarmon, Traphagan, & Mayrath, 2008) was examined. Also found was a testing of the usefulness of SL as an action learning environment (Wagner & Ip, 2009), community of inquiry (CoI) constructs—*cognitive presence*, *social presence*, and *teaching presence* within SL (Burgess, Slate, Rojas-LeBouel, & LaPrairie, 2009). Minocha and Reeves

(2010) elicited educators', designers', and students' perceptions of learning spaces within SL; whereas, Lester and King (2009) analyzed student knowledge of course content. Wiecha, Heyden, Sternthal, and Merialdi (2010) explored the potential of a virtual world for delivering continuing medical education (CME) and found that "virtual worlds offer the potential of a new medical education pedagogy to enhance learning outcomes beyond that provided by more traditional online or face-to-face postgraduate professional development activities" (p. 1). Our study fills a void by exploring the adult learner in the context of a virtual world—something previous studies have not done specifically.

As adult learners increasingly visit virtual worlds to explore learning opportunities, investigating enablers and barriers to learning is crucial. Although the role of technology cannot be separated from the knowledge gleaned from it, it is important to recognize that technology "can both isolate people" but also help "overcome barriers of space and time to bring people closer together," therefore altering environments in which adult learning occurs (Bennett & Bell, 2010, p. 416). Traditional adult learning theory has investigated barriers to participation and broken potential barriers into two categories: *external* or situational (i.e., cost or time needed to attend) and *internal* or dispositional (i.e., personal attitudes such as thinking one is too old to learn; see Johnstone & Rivera, 1965).

Valentine and Darkenwald (1990) found people are deterred from participating in adult learning experiences due to personal problems, lack of confidence, educational costs, lack of interest in organized education generally, or lack of interest in available

courses. Ardichvilli (2008) focused on enablers of knowledge sharing in virtual online CoPs and found three most discussed in the literature—organizational culture and leadership, trust, and supporting tools and technology. These barriers and enablers helped to frame our own study and served as conceptual perspectives informing the study.

Method

For this study, the research team selected the social constructivist mode of inquiry—where (a) reality is constructed through human activity, (b) members of the society invent the properties of the world together, and (c) meaning is cocreated through a social process (Lincoln & Guba, 1985). Qualitative methods were employed and are appropriate when researchers ask questions about "people's lives, the social and cultural contexts in which they lived, the ways in which they understood their worlds, and so on" (Merriam, 2009, p. 6).

Context

This inquiry was a year-long exploratory study within the virtual world, SL. The virtual world of SL was chosen because it is one of the "most widely used" (Aurilio, 2010, p. 2) and where digital content is "created by its users, for its users" (SL, 2010, para. 1). SL is an open-source web-based virtual world developed by Linden Lab that launched in 2003. Users, called *residents*, interact with each other through a self-designed avatar—a "virtual self" (White, 2008, p. 68). Residents can meet, interact, and socialize with other residents. They can also design, create, and trade virtual property

and services with one another. Linden dollars serve as currency in this virtual world (SL, 2010).

Data Collection

Data were gathered from three primary sources and two secondary sources. The primary sources were (a) open-ended questionnaires (Denzin & Lincoln, 2005) completed electronically, (b) semistructured interviews based on an interview protocol (Denzin & Lincoln, 2005) conducted entirely in SL through text chat, and (c) participant observational data (Spradley, 1980) gathered, whereby researchers acted as participant-observers in a number of VCoPs in SL.

The 45 participants recruited for this study first completed an online survey capturing demographical data and several open-ended question responses. Following the completion of their online survey, participants were contacted to schedule a time and location for their interview *in world* (within SL).

Each participant was given their preference for interview location within SL in an attempt to establish "trust" (Lincoln & Guba, 1985, p. 286) between participants and researchers; 39 of the participants chose an SL location familiar to them while the remaining 6 preferred the interviewer to choose the location. Before the interview, the researcher(s) requested a brief tour of their chosen location (to observe meaning making and customization/utilization of the virtual space). A typical tour included the participant identifying user-made content such as educational/training displays, visual notices of upcoming events, and meeting spaces. Following the tour, a semistructured interview

was conducted with follow-up questions derived from the participant's responses to the electronic survey.

Each interview averaged 1 hour in duration and was conducted by at least one member of the research team. The length and setting of the interview allowed for rich and thick descriptions (Geertz, 1973) of instances of adult learning as described by the participants. As each interview was conducted using text chat within SL, a written transcript of the interview was immediately produced by copying and pasting the text chat into a word processing document. In addition to electronic surveys and interviews, the researchers gathered data as participant-observers in a number of VCoPs in SL.

Secondary sources consisted of a review of extant literature and examination of supplementary data. Supplementary data were gleaned from numerous blogs, websites, and an educational email discussion list using a number of keywords, including, but not limited to, "avatar," "virtual learning," and "SL."

Sampling

The 45 participants were recruited through purposive sampling (Lincoln & Guba, 1985), selecting those residents who appeared to have the most potential to illuminate the phenomenon under investigation. The criteria for selection was a minimum of 6 months or at least 100 clock hours of experience within the 3D virtual world of SL, especially seeking early adopters with 3 or more years of utilization. Advertisements in public settings, invitations to identified early adopters, and postings to educational email discussion lists were used to gather participants for the inquiry.

Of the 45 participants recruited, 22 (49%) reported they were female and 23 (51%) as male. The average length of time the participants had been in SL was 1 year and 2 months (14 months) and ranged from 6 months to 3 years and 10 months (46 months) duration. Six of the 45 participants (13%) were *early adopters* (had more than 3 years' experience in SL) with a total of 9 participants (20%) having 2 years or more SL experience. The number of hours spent weekly in SL ranged from 2 hr to 40 hr with the average number of hours spent by our participants in SL being 11 hr per week.

Twelve participants (27%) in this study reported that they did not buy or lease any virtual property in SL; however, the remaining 33 participants (73%) reported that they were *landowners* (paying funds for leasing or buying virtual property) with 21 (47%) participants reporting they used their own personal funds to pay monthly land fees and 18 (40%) were custodians over virtual property that was designated as commercial, nonprofit, or education institution (please note that this item is not mutually exclusive—22% participants reported owning their own land as well as being a custodian over commercial, nonprofit, or educational institution land).

Group membership in a VCoP was reported by 93% of the participants, and 69% identified themselves primarily as educators (K-12 or higher education), and the remaining 24% were represented by various primary interests (8% were commercial/business, 4% were faith based, and 2% each for health-related, scripter/builder, training, disabilities, political, and fine arts).

Strategies for Insuring Rigor

According to Lincoln and Guba (1985), several methods can be employed to enhance trustworthiness and credibility of a qualitative research inquiry. Methods enacted in the current study included the use of a team of researchers, prolonged engagement in the field, persistent observation, and triangulation. For this study, two of the researchers are experienced in the field of adult learning and one in the field of HRD. In addition, the 1 year length of the study allowed for scope and depth as well as persistent observation within SL. *Triangulation*, the convergence among multiple sources of information to enhance credibility (see Creswell & Miller, 2000), was sought by the researchers. These multiple sources included primary and secondary source data as well as a review of relevant literature.

Data Analysis

Following collection from online open-ended surveys, semistructured interviews, observational data, and transcripts of online meetings, the data were prepared for analysis by being *unitized*, whereby a single thought or *unit* of data—"the smallest piece of information about something that can stand by itself" (Lincoln & Guba, 1985, p. 345)—was coded, themed, and clustered (Ruona, 2005). Forty-three themes emerged that were subsequently grouped into 12 clusters that could best be represented by two specific areas of learning in SL: Enablers and Barriers to Adult Learning. These clusters were categorized with supported selected quotes from open-ended survey questions and interviews, and informed by adult learning and HRD literature.

Findings

The findings in this study indicate there are important enablers and barriers to adult learning in virtual environments. We found instances of six major enablers and four major barriers. Due to the number and variety found, we found it constructive to write a brief discussion following each category to increase clarity for the reader. A general discussion will then be offered after the findings and brief discussions followed by limitations of the study.

Enablers of Adult Learning in SL

Below, we discuss six enablers of participants' learning in SL. The enablers of learning in SL include (a) a variety of educational topics for life-long learning; (b) opportunities for multidisciplinary collaboration; (c) collaboration across geographical boundaries; (d) immersive environment creates presence; (e) health and emotional benefits; and (f) cost savings over face-to-face meetings.

Enabler 1: A variety of educational topics for life-long learning. Participants in our study emphasized benefits of the availability of a variety of educational topics for life-long learning in SL. For instance, one participant stated, "I have met a native speaker of Italian and am presently teaching him English while learning conversational Italian . . .Also, I have strong design skills but lacked the computer graphics skills . . . but now, I am learning graphic design through SL." Another expressed, "There are many things that you can do in SL, such as building, photography, creating clothing etc. that I have been learning." Also, "I have more of a variety of people to meet [increasing] the variety of topics I learn with this method."

Discussion. These participants linked greater social networking opportunities to an increase in educational opportunities, reminding us of what McClelland called the need for affiliation (Nussbaum, 1999). Opportunities to communicate and be with others, albeit in a virtual environment, are described as broadening educational topics and opportunities one is exposed to in SL.

Enabler 2: Opportunities for multidisciplinary collaboration. Contrasting the limitations of being "stuck" in a traditional office space to that of SL, participants explained how they used the virtual world as a way to seek and build collaborations across disciplines. A participant related, "As an engineer [in real life], I view SL as another tool for helping me collaborate as well as a tool to help me in designing RL [real life] projects . . .I have a 'code house' to show the building code in 3D . . . for colleagues in engineering and other disciplines."

Discussion. Participant's comment revealed how SL as a tool leads to new multidiscipline collaborations and an increase in opportunities not only for learning but also for work. According to Gibb (2004), virtual communities, such as SL, can provide innovation for helping individuals in HRD and adult learning to analyze the aesthetic dimension that was not readily apparent previously. Also, Bingham and Conner (2010) describe that the social learning nature of SL allows for cross-functional and multidisciplinary teams to learn from each other.

Enabler 3: Collaboration across geographical boundaries. As the globe flattens, virtual environments help to facilitate collaboration across what would have once been considered a geographical border. A distant student reported he was located in a remote

area in real life but came into SL so he could collaborate with others in his field of computer science: “I live in a remote area with few professionals . . . I come *inworld* to collaborate; we used to attend conferences once or twice a year—but, now our field is changing so quickly, we talk daily just to keep up.” Another participant added, “This is a fantastic medium for social networking and for educational forums. I have conversed with others that I would have never done in RL [real life] due to cultural, geographical and economical and time constraints.”

Discussion. The quotes above illustrate the value SL users place on making social contacts in a virtual environment without worry of geographical boundaries. In addition, global virtual teams may experience a language barrier in other virtual environments, but SL has a language converter (“de-babbler”) that works with chat functionality across multiple languages to enable multicultural experiences.

Enabler 4: Immersive environment creates social presence. When you are in SL with others, you feel like you are present in the same physical space due to the 3D media richness of the environment. One participant remarked, “I was a member of a group that used chat and bulletin boards on the Web. But, SL is much richer and . . . you have more of a sense of being present with the other person.” Another reported, “I use email a lot and have been a member of several online communities like MySpace™ . . . [which are] nothing like SL because they are not virtual worlds. The virtual world gives you a more communal experience.” Another indicated, “SL has many distinct advantages over video conferencing and other venues . . . it provides a rich experimental and prototype platform with unique learning opportunities.”

Discussion. These participants recognized *social presence*—the phenomenon of feeling you are in the same geographical location as others, due in part to accessing the virtual world through a self-customized avatar and use of gestures—thereby facilitating "the sense of being" (Chapman, 2008, p. 918) found in the 3D immersive environment of SL. Social presence allows for effective simulations such as disaster training, mock interviews, and national border simulations whereby students and workers can practice needed workplace competencies and build their leadership and virtual teaming skills in a safe environment (Kapp & O'Driscoll, 2010a). As sophisticated technologies replace older, more limiting technologies, barriers to adult learning are removed, allowing adults to have more choices in their learning and an opportunity to link their learning to valued work skills and personal learning choices (McCain, 2009).

Enabler 5: Health and emotional benefits. Several participants emphasized psychosocial and well-being aspects of participating in SL: "I think SL has enriched my life immensely through the opportunities I've had to express my creativity and interface with interesting people." Another noted they had a positive physical response in connection with their time spent in SL fostering decreases in pain and diabetes medication,"I am diabetic with several injuries . . . SL has given me a new lease on life allowing me to use my mind—and off the chronic pain . . . I tend to take less pain medication and it [SL] helps me keep my blood sugar in control" and, also, "We older folks always look younger [in SL] than we are. We don't think about our ailments." Another expressed, "Due to my health, I am currently not able to do many of the

activities that I have experienced in SL, such as: surfing, ballroom dancing, riding a motorcycle, etc."

Discussion. The network of meaningful relationships that develop in SL help participants integrate creativity into the social contexts of their day-to-day work environments, which leads to increased feelings of health and emotional benefits. Elliott (2010) noted that using virtual learning environments permitted wounded service members to focus on something other than their injuries and the subsequent burn treatments, thereby allowing for a much more tolerable experience.

Enabler 6: Cost savings over face-to-face experiences. Virtual environments have the potential to decrease both the barriers of lack of time and money for individuals and organizations. One of the participants identified herself as a full-time commercial builder in SL, who frequently built prototypes of upcoming designs for business clients. She took the researcher to one of her commercial areas, showing a prototype and stated, "They are coming out with this new bottle design and they wanted to showcase it to their investors and employees here in SL before it hit the market," and then added, "so my point is that it's much cheaper to showcase the idea here in SL rather than flying everyone in real life to attend a meeting with a prototype drawing."

Another participant noted, "In SL, I attend technical seminars—attending a similar seminar [in the physical world] costs money and time . . . since they are usually held in other countries. Based on this I can say that SL learning is significant to me."

Discussion. As the SL platform allows users to build and create tools for learning, individuals can create actual models representing what they are actually

learning or imagining. Both learners and organizations benefit from reduced time and travel expenditures that virtual environments provide (see Nafukho, Graham, & Muyia, 2010). The two most often cited reasons for not participating in classes aimed at developing adults' skills are lack of time and lack of money (Merriam et al., 2007).

These excerpts highlight concrete ways by which participants in SL have recognized that adult learning experiences have occurred. Barriers to adult learning will be discussed next.

Barriers to Adult Learning in SL

Warburton (2009) discussed barriers to deploying virtual worlds in learning and teaching because "The complexity of immersive environments spans a range of technical and social intricacies, and presents a particular set of problems to educators and developers seeking to situate educational activities in a virtual space" (p. 422). In our study, we found four barriers to adult learning: (a) glitches in technology reduce effectiveness; (b) addictiveness of SL; (c) learning curve for "newbies"; and (d) funding issues for small businesses and nonprofits. As each barrier to learning is presented, a discussion of it will immediately follow.

Barrier 1: Glitches in technology reduce effectiveness. One professor participating in the study described how her students were "intrigued by it [SL] . . . but a major drawback is that they can't access Second Life from the University network . . . They have tried to work with me to enable access on some ports, but even when they do, it is problematic." Another participant described how "the limitations of the platform (lag, crashing, etc.) can be very frustrating."

Discussion. Hedberg (2006) indicated that the use of computers in instructional endeavors is inconsistently employed at best. Technological glitches are often cited as one of the reasons adults become frustrated and abandon technology-related pursuits. Participants in this study reflected frustration when encountering technology problems which is a barrier to the learning experience. Chapman (2008) reported that technology (such as firewalls, computer and Internet speed, and SL itself which may reboot frequently) are issues when teaching and learning in SL.

Barrier 2: Addictiveness of SL. Several participants emphasized the increased importance they placed on spending time in SL, not necessarily pursuing learning opportunities. They described what they termed SL's "addictive" qualities. One participant related, "When I'm online late in the day or for extended periods, I have found at least 5 times that I've dreamed about being in SL and conversing with others." Similar to the addictive nature of video games, some participants found themselves spending countless hours engaged with SL activities. Another reported, "Like a lot of SL residents, I find that Second Life interferes with Real Life, and that Real Life interferes with Second Life. Both lives are busy, and I could use extra hours in both."

Discussion. The "addictive" nature of SL serves as a caution to adult educators and HRD professionals to take care when designing and choosing learning opportunities in SL. In addition, HRD professionals should find new ways of leveraging the tenacity of residents for long-term projects. Chapman (2008) noted that even the American Medical Association has discussed the addictive qualities of virtual worlds and other 3D environments.

Barrier 3: Learning curve for "newbies." Many of the instructors who participated in the study expressed frustration with the learning curve for newcomers or "newbies" to SL. One found that his student had trouble navigating the world of SL and this impeded her learning, "She had a lot of trouble with just getting around . . . everything seemed difficult for her." Even some instructors complained about learning the technology One participant explained, "Much of this technology is over my head. I spend most of my time just learning to swim so to speak." Also, a participant remarked, "I've seen newbies from classes I've participated in come into SL but leave as soon as the class ends. I ask them why and they usually tell me that they are uncomfortable in a place where there are too many options, not enough rules."

Discussion. There is a significant learning curve in SL for newcomers because, for many, it is unclear how to move, chat, teleport, and find islands to visit. Essentially, SL can be difficult for some to use with its steep learning curve for creating virtual items and communicating with other avatars (Baker, 2009; Chapman, 2008). In a virtual learning environment, when encountering a new and complex learning domain where a learner "has no previous domain knowledge," some learners are "incapable of knowing what to learn" (van Harmelen, 2008, p. 36). Also, some who come into the 3D environment of SL expect it is like other 3D games, where you take on a role and are told the rules. SL, however, is a place open to user-made content, freedom of expression, and organizing events requiring self-directedness. It appeared from the data that some newbies are stuck in the learning curve and were not able to be self-directed (implying the need for mentoring or other support).

Barrier 4: Funding issues for small businesses and nonprofits. Establishing an SL campus or business presence can be quite expensive (several thousand dollars including the cost to purchase virtual land, maintenance fees, and costs for a 3D builder), therefore cost prohibitive for smaller organizations or small businesses. As one participant exclaimed, "The costs to build something in SL are unbelievable!" referring to the initial cost of acquiring virtual land exclusively to be used for a nonprofit or commercial venture. Another participant remarked that "all the really great commercial builds are accomplished by contracting with SL builders who are very skilled at what they do. It can be pricey, though, often into the thousands [of dollars]."

Discussion. The majority of individuals who cited funding issues as a barrier to learning in SL were referring to the establishment of a campus, business or nonprofit space in SL. Although there is no cost for an individual account or to participate in SL, building a presence is expensive. However, if the presence in SL replaces a physical space in the real world, the costs would need to be weighed on outcomes and benefits (see Chapman & Stone, 2010).

General Discussion

Findings underscore the multifaceted roles virtual worlds such as SL can play in learners' lives, across geographical spaces, in multidisciplinary ways. We found instances of adult learning and training and development within the virtual world, SL. Furthermore, many of our participants made reference to a "new perspective," a "new paradigm," and a "change in the way we do business" regarding this virtual learning environment. We found results to support the importance of both flexibility of delivery

and flexibility in the pace of learning within the virtual learning environment of SL. The flexibilities allow for (a) delivery of services independent of time and space; (b) ability to reach those beyond normal boundaries; (c) learning at one's own time and space; and (d) lifelong learning (Macpherson, Elliot, Harris, & Homan, 2004).

As virtual learning environments increase in popularity, investigating barriers that appear and those that are overcome will continue to be important because for adult education and VHRD to be "strategic, it must develop with the sociocultural context" (Bennett, 2009, p. 372). Technological devices such as computers and mobile devices empower individuals rather than oppress them. Nevertheless, simultaneous with development of technologically sophisticated delivery systems that result in the rise of virtual organizations offering web-based education and training, VHRD "must be planned with care and purpose" (Bennett, 2009, p. 372) as scholars need to exercise caution and maintain a critical perspective when exploring the social context of adult learning in virtual environments.

The results suggest themes that indicate virtual environments add an educational/learning value when used in training and educational settings. There are implications for the fields of HRD, adult education and learning, and the emerging field of VHRD. We found instances of adult learning and training and development within SL, which supports the notion that a virtual world provides a "media-rich and culturally relevant Web environment that strategically improves expertise, performance, innovation, and community building through formal and informal learning" (Bennett, 2009, p. 365).

The most salient features of adult learning in virtual worlds are situated and social environments, intrinsically engaging, with a high degree of personal agency requirements; furthermore, learning in virtual worlds allows users to find out "what they need to know, when they need to know it" (Aurilio, 2010, p. 23). Learning in virtual environments allows for individuals to gain experiences they may find impossible in the physical world, and it allows for one to represent one's self in multiple ways (Bennett & Bell, 2010). Furthermore, virtual worlds permit new knowledge to be created and extend human capability (Bennett & Bell, 2010). Learning in virtual worlds can also mirror a workplace community of practice that "fosters organizational learning through sharing best practices" (Bennett, 2009, p. 366).

Furthermore, our study confirms much of what others have found posited around learning in virtual worlds in that they allow users to (a) boost intellectual and emotional self-esteem effects through developing expertise and through a sense of belonging to the virtual communities of practice and helping others (Ardichvilli, 2008); (b) connect their new learning obtained in the virtual learning environment with previous experience (Merriam, 2008); (c) enable readiness to learn through trust and availability of supporting tools in the virtual learning environment (Ardichvilli, 2008); (d) link their learning orientation to situated or sociocultural context for a "richer, more holistic understanding" (Merriam, 2008, p. 95); and (e) employ the critical factor in determining successful learning through their motivation (Ardichvilli, 2008).

Limitations of the Study

Several limitations of our study can be seen. Purposive sampling (looking for experienced SL users across multiple disciplines) was done in attempt to illuminate the phenomenon (Lincoln & Guba, 1985), that is, gather evidence of adult learning in a virtual world (including enablers and barriers to learning); therefore, the sampling was sufficient for our purpose. Also, a limitation can be seen as we did not see anything could be gained by giving our participants another written transcript of the interview; however, we did not take our interpretations of enablers and barriers to learning back to our participants (*member checking*; see Lincoln & Guba,1985) which might have yielded confirmation or further insights. Also, the use of an avatar in a virtual world assumes anonymity by design. Therefore, assumptions were made by the researchers as to the truthfulness of the avatar responses; however, due to the length of interviews, observation of their virtual spaces, online surveys, and prolonged engagement in the field, we felt a reasonable level of comfort with obtained interview data.

Next, we will examine several implications for research and practice. Then, we will offer several concluding thoughts.

Implications for VHRD Practice and Research

Implications for Practice

Several implications for practice can be identified from the findings in this inquiry. First, the steep learning curve for "newbies" in SL was described by many of our participants and within the reviewed literature. A learning curve is associated with the introduction of new technology; however, complex and immersive environments

such as SL require more time for participants to feel comfortable in these new spaces. HRD practitioners should intentionally build in time for exploration and also mentoring support from more experienced users as "newbies" learn how to move, communicate, and understand both the technical aspect and the culture of a new learning environment.

Second, due to the media richness, social presence, and collaborative tools such as voice chatting, SL is a perfect virtual venue for scholars and practitioners to examine instances of all facets of HRD beyond the broad look of this exploratory study of adult learning (i.e., training and development, leadership development, organization development, career development, and scenario planning). It would be of benefit to examine our traditional models for training and development as well as our strategic learning tools in these new venues.

Third, many of our participants made reference to a "new perspective," "new paradigm," "change in the way we do business" regarding the learning space of SL. Therefore, it is crucial, as we examine VHRD, that we identify what *new skillset* is required for operating in these new media-rich and culturally relevant virtual spaces (see Bennett, 2009; McWhorter, 2010).

Fourth, scholars and practitioners need to recognize that in organizations, there are additional concerns about the virtual learning environment, such as *privacy* (especially if exchanging best practices in open-source sites), *metrics* (the need to capture and measure the learning against performance improvement plans; see Chapman & Stone, 2010), *justifying costs* (making the case for start-up cost for buying an island by connecting individual learning to organizational strategies; see Nafukho et al., 2010),

innovation (i.e., how SDL in SL can promote innovation), and *on-boarding* (assistance to overcome a steep learning curve).

Implications for Further Research

Research findings in this study imply further investigation to extend the study of adult learning into other virtual settings. For instance, a natural extension would be an inquiry into SL enterprise environments, where organizations place the 3D world of SL onto their own servers, thereby providing the same level of security and centralized oversight as their intranet—with the ability for impromptu meetings, training and development, and participating in company-wide events from employee desktops (see Nino, 2009; Williams, 2009). Another extension for research would be to expand the investigation of adult learning into other media-rich environments such as other virtual worlds and those using augmented reality (AR) technologies whereby "real world activities are superimposed with virtual simulations" (Harvard Graduate School of Education, 2009, para. 3) to see if enablers and barriers found in the current study still hold in these new immersive environments. Also, one of the results from this study indicated positive health benefits (reduced blood sugar and the lowering of chronic pain) and mood benefits reported by several participants; therefore, we call on HRD researchers to partner with the health and psychology professionals to examine this connection more fully.

Conclusion

In conclusion, we feel there is much yet to be examined in adult learning and HRD within virtual environments. The findings from our study suggest that adult

learning and HRD processes conducted in media-rich virtual environments do, indeed, appear diverse enough from traditional face-to-face educational environments and that it can and should be studied as a new construct with particular attention to how this new construct may change current HRD foundational theories and practice. Given the overwhelming popularity of virtual environments in everyday living, this study highlights the significance of using virtual environments for developing HRD learning sites within these environments. We hope readers will be inspired to think about their own research and practice and how they could contribute to furthering our understanding of this innovative and complex phenomenon.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this dissertation was to present four articles that reflected two primary streams of research. The first stream (Chapters II and III) explored scenario planning as the development of leadership capability and capacity with data collection from five semi-structured interviews with expert-practitioners in both scenario planning and the development of leadership in an effort to capture their lived experiences. Additional data were collected from published scenario planning reports, relevant and related literatures, and university programs in business schools with a scenario planning component, and used to further inform this inquiry.

Although only previously implicit in the literature and in the minds of the purposively selected expert-practitioners, an associative relationship between scenario planning and the development of leadership capability and capacity was discerned. Through data collection and analysis three theoretical frameworks were synthesized into an *integrative heuristic* and later renamed *synthesis model* useful for collecting, organizing, and analyzing the data. As data cumulated through four iterations of the study, rich evidence for the implicit link substantiated this work and trustworthiness in the *synthesis model* and ultimately in the hypothesized association between scenario planning and the development of leadership capability and capacity.

This research on scenario planning as the development of leadership capability and capacity is unique in that it empirically began filling a void that was previously unexplored in the leadership and organizational literature. It was within the first article

of this dissertation (Chapter II) that scenario planning was first linked *explicitly* through *empirical evidence* with the development of leadership capability and capacity. In addition, this research provided valuable insight not only in recognizing the association between scenario planning and the development of leadership capability and capacity but the nature of the association as well. Represented graphically in the *synthesis model*, the overlap between these two constructs can be examined more closely. It was reported that the next planned step in this journey is the initial construction of a grounded theory of *scenario-based leadership,* based on the accumulation of rich, thick descriptive data (Geertz, 1973) collected and analyzed to date.

The second stream of research in this study focused on the exploration of sophisticated virtual environments for their usefulness for developmental activities. The first article (Chapter IV) in this stream was conceptual and reflected on ways that the field of HRD has approached technology usage in the past. Adapting Kapp and O'Driscoll's (2010a) internet connectivity framework, informing extracts from AHRD literature were presented. Such examples punctuated the increased importance of technology within the field of HRD. In addition, examples of documented 3D training in virtual worlds (through an avatar) were presented that included examples such as employee orientations and training of safety procedures, medical training simulations at virtual hospitals, disaster preparedness simulations, and leadership development activities as ways for organizations to leverage sophisticated technologies for connecting and training employees at a distance.

I speculated that virtual worlds were not the only platform to look for VHRD—

as powerful mobile technologies and complex internets evolve, the work of HRD can be accomplished more readily within media-rich environments such as those found in contemporary videoconferencing settings, virtual classrooms, advanced mobile devices (such as the iPAD™) and augmented reality (that combines real world data with computer generated data). These new environments allow end-users to meet "within" the technology (not just connecting through it) in these new digital spaces. But, I cautioned HRD scholars to engage in research of VHRD before other fields claim it as part of their area of inquiry.

As part of this stream of inquiry, an empirical study into instances of adult learning in a virtual world was accomplished (See Chapter V). The research team became participant-observers (Spradley, 1980) in the virtual world of Second Life™ and purposively selected forty-five participants for open-ended online surveys and follow-up semi-structured interviews. Instances of adult learning included foreign language acquisition where a native-speaker and a second language learner engage regularly in conversations thereby learning context as well as usage. Other instances documented were *meetups* (informal meetings) between professionals in the same field but geographically distanced who came *inworld* (in Second Life) to problem solve or keep current with new knowledge in their field; also, more formalized instances of adult learning included formal courses for college credit.

Data analysis in this study (Chapter V) reflected forty-three themes that emerged from the data and were clustered into two specific areas of learning in Second Life™ (SL): enablers and barriers to adult learning in a virtual world. The six enablers included:

a variety of educational topics for life-long learning, opportunities for multidisciplinary collaboration, collaboration across geographical boundaries, immersive environment creates social presence (the feeling you are in the same geographical location as others*), health and emotional benefits,* and *cost savings over face-to-face experiences*. In contrast, four barriers to adult learning discovered in this study included: *glitches in technology reduced effectiveness*, *addictiveness of SL*, *learning curve for "newbies"* (newcomers), and *funding issues for small businesses and nonprofits*.

Many of the forty-five participants in the study made reference to a "new perspective", a "new paradigm", and a "change in the way we do business" in relation to the 3D learning environment of SL which underscores the need for HRD scholars and practitioners to investigate if a new skill set, a *virtual skill set,* is required for operating in these new media-rich and culturally relevant virtual spaces (see Bennett, 2009; McWhorter, Mancuso & Hurt, 2008).

A cursory review of relevant literature indicates that likely salient components of a *virtual skill set* include: 1) facilitator of learning (directing students or trainees to resources thus putting them in charge of their own learning), 2) designer of virtual learning content conducive to sophisticated virtual environments such as simulations and group collaborative activities, 3) strong online presence for guiding students/trainees in the learning process, 4) competencies in alternative assessment/evaluation tools and deliverables appropriate to online environments, 5) competencies in multi-tasking (i.e. monitoring text chat, answering and speaking in voice chat, while providing learning experiences) in synchronous virtual environments (see Aldrich, 2004; Bingham &

Conner, 2010; Gronstedt, 2011; Kapp & O'Driscoll, 2010a, 2010b; Palloff & Pratt, 2011).

Enablers and barriers found in this empirical study should be further investigated to determine if they are applicable in other virtual environments used for learning and training and development (such as virtual classrooms like Elluminate Live™ and web conferencing platforms such as Adobe Connect™). Also, this study included implications for the need to examine traditional models for learning and training and development to see if modifications are needed when utilized in virtual environments.

The two streams of inquiry in this study are moving closer to one another as sophisticated technologies are enabling the phenomenon of VHRD in the workplace (Cisco, 2010; Green, 2011) . As we connect to one another *within* virtual environments, whether it be on a traditional computer or mobile device, developmental efforts for virtual work teams and processes such as virtual training and development are already being realized (Rasmus, 2009; Short, 2010) and this study found that *virtual scenario planning* (utilizing synchronous technologies such as videoconferencing and virtual worlds) is a reasonable next step to link geographically disbursed stakeholders.

In 2007, Cascio (a scenario planner), documented the first known case of technology as a facilitator of an *online scenario planning* activity. In this case, 15 attendees from a nonprofit organization utilized five mediums—voice through a call system, email, a shared whiteboard online space, online spreadsheet, and text chat channel with the stakeholders situated throughout the U.S., Europe, and New Zealand who were connected via technology for participation in a virtual scenario planning

workshop. Through the use of technology, the planner remarked that "one thing is absolutely certain: it is entirely possible to run a futures event using distributed technology and still retain participant interest -- and generate useful, novel content, as well" (¶2).

Raford (2009) proposed that scenario planning could be accomplished online with benefits such as "[Stakeholders] don't have to be in the same place at the same time, [can] involve a larger, more diverse group, and allow for variable participation levels" (Slide 2). By using web technologies (initially as wiki-style project), he posited that scenario planning might be accomplished online.

In recent years, technology has become increasingly sophisticated and mobile such that *virtual scenario planning as leadership development* (scenario planning enabled through synchronous virtual technologies such as videoconferencing, virtual worlds and mobile applications for the purpose of the development of leadership capability and capacity) appears to be a viable endeavor where the two streams of inquiry in this study coalesce (See Figure 3).

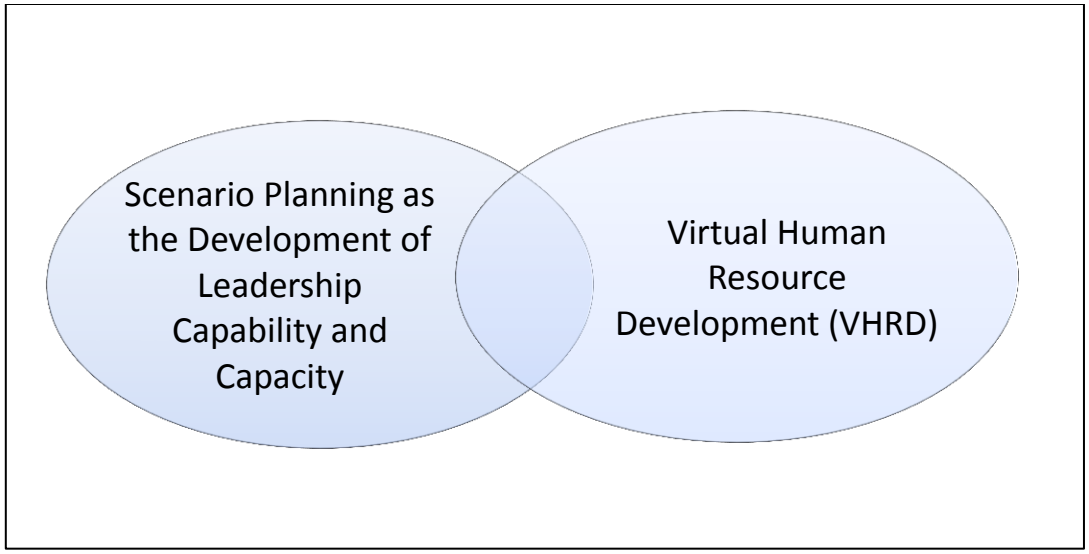

Figure 3: Potential Coalescence of Scenario Planning as the Development of Leadership Capability and Capacity; and Virtual Human Resource Development

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APPENDIX A

TOWARDS A SOCIAL CONSTRUCTIVIST THEORY OF SCENARIO PLANNING

It is no secret that theory development is not the neat, precise process it is often made out to be (March, Sproull, & Tamuz, 1991; Turnbull, 2002). Theory development takes its shape based on the orientation, perspectives, and assumptions about knowledge held by the theorist (Burrell & Morgan, 1979; Denzin & Lincoln, 1994). Theory development remains perhaps the most complex of human intellectual activity–and for good reason: the architecture of new knowledge is not well-understood.

Any phenomenon can be approached from a variety of perspectives. In part, the satisfaction of being human can come from seeing the world through different lenses. Thus, when a theory is proposed, and evidence is gathered that is found to support the theory, it is naïve to conclude that the related phenomenon has been explained in its entirety. Perhaps an instance of the phenomenon has been explained, but if we have learned anything in the last half-century, it is that context matters (Lincoln, 1990; Lincoln & Guba, 1985).

The purpose of this article is to study a phenomenon from a different theoretical lens than it has previously been studied. Specifically, this article proposes a theoryof scenario planning from a constructivist perspective. Scenario planning has been theorized and explained from a post-positivist approach (Chermack, 2002a, 2004; 2005), and while the post-positivist approach has yielded insights, it is far from a complete explanation of scenario planning. Existing theorizing on scenario planning has limits that

have motivated viewing the phenomenon from an alternate perspective. This article proceeds by describing scenario planning and its existing theorizing. What follows is a presentation of a social constructivist theory of scenario planning based on three critical sources of data, namely, 1) expert interviews, 2) sets of published scenarios, and 3) existing literature. These three data sources serve as the basis in which to ground a social constructivist theory of scenario planning.

Problem and Research Questions

Organization leaders are struggling with uncertainty. The business environment can be characterized as chaotic and turbulent (Chermack, 2010, Ramirez, Selsky, & van der Heijden, 2008; Wack, 1985a). Scenario planning is a tool for helping leaders navigate the chaos, and entertain a variety of possibilities around an issue. The purpose of a theory is to explain what a phenomenon is and how it works (Toracco, 1997). Prior to 2004, scenario planning had received little academic attention and could be described as a practitioner's art. In addition, scenario planning literature did not involve theory, and clear descriptions of what scenario planning was and how it worked were not available. In 2004 a theory of scenario planning was presented (Chermack, 2004) in a work that attempted to address this gap. The theory contributed to a more general understanding of scenario planning, but was not complete, because it did not account for explanation and description at the local level.

The problem addressed is that the existing theory of scenario planning highlights general relationships and cannot account for the nuanced details, and context that are

standard features of any scenario project. Two research questions are used to direct the resulting inquiry and theorizing:

RQ 1: What is a theory of scenario planning from a constructivist perspective?

RQ 2: How does a social constructivist theory of scenario planning expand knowledge and understanding of the scenario planning phenomenon?

Initial coding and data collection. After the initial meeting the researchers developed a strategy to collect, unitize and analyze the relevant data. Logical sources of data included interviews with scenario planning experts, a general knowledge of the scenario planning and related literature, and published sets of scenarios. An overall plan was established to divide labor among the team members, but also with scheduled times for coming together to co-construct and member-check an interpretation of the project data. Two researchers conducted an initial sort and coding of the data, and then met to check, and co-create an initial framework for theorizing.

Interviews. Interviews with scenario planning experts were chosen from a variety of previous research projects in accordance with grounded theory methodology (Charmaz, 2006). Experts were chosen based on extensive experience with scenario planning (minimum of ten years of experience), availability, and willingness to participate. Interviews with four scenario planning experts were selected as interview participants for this research study. Interviews were conducted, recorded, and transcribed. Interview data were unitized and the resulting "units" transferred to index cards (one per unit of data) according to the process advocated by Lincoln and Guba (1985).

Two authors independently sorted the data cards and then met to compare, negotiate and co-compile sorting and coding results. This process represented the initial data collection and coding delineated by Charmaz (2006). Remarkably, the two authors' resulting categories were quite similar, and negotiation was minimal. A specific workshop was arranged to go through each authors' sorting results, explain why data units were put into a certain category, and for conversation about the phenomenon and interview data to further co-construct understanding.

Categories were expanded and renamed where appropriate, and a general framework began to emerge through dialogue, constant comparison and a shared understanding of what the data revealed about scenario planning. Several rounds of member checking further refined categories as data were interpreted. An initial framework for a social constructivist theory of scenario planning emerged, but would require further accumulation and refinement through Charmaz's additional theoretical sampling and specifying additional data (2006).

Initial memos raising codes to tentative categories. Categories were expanded and renamed where appropriate, and a general framework began to emerge through dialogue, conversation and a shared understanding of what the data revealed about scenario planning. Several rounds of member checking further refined categories as data were interpreted. Tentative categories are as shown in Figure 4.

Purposes of Scenario Planning	Process of Scenario Planning	Outcomes of Scenario Planning

Figure 4. Tentative Categories of an Emerging Theory of Scenario Planning from a Social Constructivist Perspective

Data collection and focused coding. Data were further analyzed, added to, and re-conceptualized, re-describing key themes in each category. See Figure 5.

Purposes of Scenario Planning	Process of Scenario Planning	Outcomes of Scenario Planning

• Stakeholders and Context
• Unspecified purposes
• Purpose related to metaphysics
• What is Scenario Planning
  ○ Definition
  ○ Description
  ○ How do experts construct scenario planning
	• Process as outcome
	• Scenario planning as lived experience
	• Local/immediate outcomes
	  ○ General
	  ○ Specific
	• Units
	• How they are associated
		• Managing external risks and opportunities
		• "See" differently
		• "Bigger picture, consenced sense of existence
		• Scenario Planning as a part of a larger process
		• Adaptation with minimal resource impact
		• Provide space

Figure 5 Tentative Categories with Emergent Themes from Interview Data in an Emerging Theory of Scenario Planning from a Social Constructivist Perspective

Purposes of Scenario Planning	Process of Scenario Planning	Outcomes of Scenario Planning
		• Changing thinking • Learning • Consider unthinkable events • Leverage change • Affect fundamental change at individual, group, process, and organization levels • Early detection System • Sustainability of system • Capacity • Action-Orientation

Figure 5: Continued

Theoretical sampling and seeking specific new data. A second data source was sought to augment the interview data and lend further robustness and depth of description (*verstehen*) to the theorizing. Specific additional data that would logically add content to the theory development exercise would include published sets of scenarios. All of the authors keep libraries of published sets of scenarios on their computers. A list of all of these scenario sets was generated and the team agreed to use four sets of scenarios to inform their theorizing. The sets of scenarios needed to represent a wide array of scenario application areas, so variety was the overarching criterion. In short, the researchers simply chose four sets of scenarios they felt represented the breadth and depth of overall scenario practice.

The four sets of scenarios were also unitized, coded and sorted into categories and themes. The sorting activity resulted in remarkably similar categories to the interview analysis. Member and peer checking were used to further confirm the categories, and was, again, typified by a high degree of consensus.

Sorting memos. Results and categories from the analysis of four published sets of scenarios were 'folded in' to the data structure from the interview analysis. The sampling of published scenario sets confirmed categories generated in previous research stages, and lent a sense of trustworthiness to the emerging conceptual framework.

Integrating memos and diagramming concepts. Integrating the categories and themes from these data sets is no easy task and requires consistent re/negotiation. From a data summary perspective, these analyses are integrated in Figure 5.

Table 9: Emergent Categories from Four Published Sets of Scenarios.

Scenarios	Type/Purpose	Process	Outcomes
Mont Fleur	Community dialogue—to engage a community of leadership to explore the future[1]	• In the midst of deep national conflict, a diverse group of 22 prominent South Africans came together • Participants debated how to shape South Africa for the following 10 years • Group worked to both develop and then disseminate scenarios to South Africans through various media channels • During scenario planning, the participant group considered many storylines and ultimately they reached consensus on four scenarios	• Established a common vocabulary among group members which extended to many South Africans • Group reached consensus on how their country 'worked' leading to agreement of what would not be favorable outcome • Offered four scenarios that the participants believed to be plausible and relevant • Each scenario offered a message to South Africans in how or how not to handle their current crisis

Continued

Table 9: Continued

AIDS in Africa: Scenarios for the Future	Decision-Making: Strategize solutions across multi-disciplinary community[1]	• A diverse participant group comprised of approx. 50 individuals drawn from government, civil society and business representing mix of competencies, national origins, gender, ages and cultures • Participants collaboratively produced an overview of the HIV/AIDS problem. • Surfaced and explored the range of relevant issues and explored key drivers of change. • The participants worked in groups to reflect on what they had learned, to agree on the priority of inevitable changes and critical uncertainties	• Offered three scenarios that the participants believed to be plausible • Achieved a common language within the group for developing an understanding of HIV/AIDS and its impact across Africa and beyond • Trust increased among the participants • Due to the collaborative nature of the diverse participant group, they secured a wider legitimacy, interest and usability of the scenarios themselves for developing possible solutions to the epidemic under study.
Tucson Water Plan: 2000-2050	Scarce resource management[2]	• Multi-stakeholder participant team gathered information on the water shortage in the Tucson area • The participant team developed a list of fourteen driving forces, variables, and uncertainties associated with the scarcity of water in the Tucson area. • The team ranked each driving force in terms of their relative importance and uncertainty. • Participant team collaboratively assessed items identified as having the greatest importance and highest uncertainty.	• Opened dialogue with the community to address the water-resource challenges that lay ahead • Four plausible futures for Tucson Water District resulted from the scenario planning process • Each future reflected issues of socio-political, technical, logistical, environmental and economic concerns. • Pathways from the current Tucson water concerns to each of the four futures identified were developed with commonalties examined

The data analyses are connected by major table headings to demonstrate the content relevant in each major category. Figure 5 simply layers major themes from each

set of scenarios within the proposed framework for theorizing scenario planning. The idea is to begin to see the major categories evident in each set of scenarios.

Purposes of Scenario Planning	**Process of Scenario Planning**	**Outcomes of Scenario Planning**

• Stakeholders and Context
• Unspecified purposes
• Purpose related to metaphysics
• What is Scenario Planning
  ○ Definition
  ○ Description
  ○ How do experts construct scenario planning
	• Process as outcome
	• Scenario planning as lived experience
	• Local/immediate outcomes
	  ○ General
	  ○ Specific
	• Units
	• How they are associated
	•
		• Managing external risks and opportunities
		• "See" differently
		• "Bigger picture, consenced sense of existence
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Figure 6: Integration of Categories and Themes from Datasets

Purposes of Scenario Planning		Process of Scenario Planning	Outcomes of Scenario Planning
AIDS in Africa: Scenarios for the Future	Decision-Making: Strategize solutions across multi-disciplinary community[1]	• A diverse participant group comprised of approx. 50 individuals drawn from government, civil society and business representing mix of competencies, national origins, gender, ages and cultures • Participants collaboratively produced an overview of the HIV/AIDS problem. • Surfaced and explored the range of relevant issues and explored key drivers of change. • The participants worked in groups to reflect on what they had learned, to agree on the priority of inevitable changes and critical uncertainties	• Offered three scenarios that the participants believed to be plausible • Achieved a common language within the group for developing an understanding of HIV/AIDS and its impact across Africa and beyond • Trust increased among the participants • Due to the collaborative nature of the diverse participant group, they secured a wider legitimacy, interest and usability of the scenarios themselves for developing possible solutions to the epidemic under study.
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Figure 6: Continued

First draft. This research represents our 'first draft' of theorizing scenario planning from a social constructivist perspective. The outcomes can only be called preliminary as further data collection, analysis and peer checking is needed to confirm and bolster this study. Further research that would contribute to and further our theorizing is outlined in the discussion section.

Discussion

Results of this study indicate that a social constructivist theory of scenario planning can be developed and has the potential to shed new light on scenario planning theory and practice. Because the emerging framework from this research differs significantly from existing theorizing on scenario planning (Chermack, 2004; 2005), it seems fair to suggest that this alternate perspective will yield significant insight. However, it is also clear that theorizing from a social constructivist perspective is a lengthy, time-consuming process, requiring a variety of data sources and variety of participants to co-construct the theory.

Data presented in Figure 5 captures the essence of theorizing scenario planning from a social constructivist perspective. The proposed theorizing is necessarily a first draft, and there are three clear strategies for improving, refining, and adding robustness to this theorizing. These strategies include (1) additional data from a scenario case project, (2) using Lincoln and Lynham's 13 criteria for co-judging 'good' theory from the constructivist (and multi-stakeholder) perspective, and (3) integrating interviews with scenario planning participants to gain additional nuanced and co-constructed perspective about what scenario planning is and how it works.

Data from a Scenario Case Project

Data from a scenario case project could reveal even more about the nuanced, context-driven aspects of scenario planning. Participant perspectives will be critical to understanding the nature of scenario planning and how it can be most effectively facilitated and implemented. Further research (planned by the authors) will incorporate these practical perspectives and integrate novice, moderately experienced, and expert perspectives.

Integrate Participant Interviews

Another highly useful data set would be a set of interviews with scenario planning participants. Participant perceptions will add another dynamic perspective to refine the proposed theorizing. Participant interviews are a critical missing piece for the emerging theory proposed, and can be cited as a major limitation of the framework for understanding scenario planning. While the proposed theorizing includes valuable perspectives, it is far from complete, far from comprehensive and requires substantial addition.

Apply Lincoln and Lynhams' Criteria

Lincoln and Lynham developed 13 criteria for judging 'good' theory from a social constructivist perspective (in press): meaningfulness, thick description and applicability, narrative elegance, transferability, empirical verifiability, fruitfulness, insightfulness and usefulness, compellingness, saturation, prompt to action, fittingness, and transferability/transportability. The proposed theorizing of scenario planning resulting from this research should be 'riddled' through these 13 criteria. This theory

'testing' would show where our theorizing is weak, and needs further re/development and refinement. This activity would also demonstrate the utility (or lack thereof) of the theorizing we propose. It is clear that theorizing from a social constructivist perspective requires numerous rounds of revision and refinement, and using the 13 criteria proposed by Lincoln and Lynham can be a consistent measure of progress.

Emerging Conclusions

Reasonable conclusions based on the theorizing presented is that scenario planning can be theorized from a variety of perspectives, and that each perspective is likely to yield new insights about what scenario planning is and how it works. While furthering a theory of scenario planning from a constructivist perspective will take considerable additional data sets and ongoing refinement, such theorizing has already produced a different framework than previous theory development activity. This difference is exciting in the larger view because it implies that virtually any HRD phenomenon could be viewed from an alternate theoretical and philosophical perspective, with a likelihood of additional insights and new research problems and questions.

APPENDIX B

SCENARIO PLANNING AS THE DEVELOPMENT OF LEADERSHIP CAPABILITY AND CAPACITY: A SOCIAL CONSTRUCTIVIST CASE STUDY* (EXTENDED SYNOPSIS)

Scenario planning has been championed as Human Resource Development's (HRD) "strategic learning tool" (Chermack & Swanson, 2008, p. 130) yet little is known about its benefits within the field of HRD. Numerous scholars have challenged HRD professionals to gather empirical evidence to support or refute the benefits of scenario planning within the field of HRD (Chermack, 2003; Chermack & Lynham, 2004; Chermack, Lynham & van der Merwe, 2006; McWhorter, Lynham & Porter, 2008; Provo, Lynham, Ruona & Miller, 1998). This inquiry takes up the challenge to provide empirical evidence for the utility of scenario planning.

Volckmann (2004, 2005) posited scenario planning as a device for developing leadership within organizations. Further, Wack (1985a) remarked that the primary purpose for scenario planning is to "shift the thinking of the leadership inside the organization to what might happen, in the future, in the external environment" (p. 73). Also, a study found evidence that there was an overlap in the processes and outcomes of scenario planning and the development of leadership capability and capacity

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(McWhorter, Lynham & Porter, 2008). One of the objectives of this inquiry was to continue gathering evidence of the overlap of these two phenomenon.

One of the purposes identified for using scenario planning is to enable "organizational alignment and engagement" (van der Merwe, 2008, p. 225). This social constructivist case study concentrates on one organization that enacted a scenario planning intervention over a three-month period for two purported purposes: (1) creating an awareness of scenario planning and its strategic benefits to the entire organization, and (2) to increase the engagement and alignment of personnel at all levels in organizational strategy.

A case study can be defined as "a type of qualitative research in which in-depth data are gathered relative to a single individual, program, or event, for the purpose of learning more about an unknown or poorly understood situation" (Leedy & Ormrod, 2005, p. 108). Social constructivist methods are those that advocate that knowledge is socially constructed and often involves qualitative methods of observation and semi-structured interviews (Lincoln & Guba, 1985). Similarly, Wright (2005) identified social constructivism as a primary theoretical domain informing the process of scenario planning.

In the current social constructivist case study, several research methods were employed. Data were gathered through 1) semi-structured interviews with six scenario planning participants selected purposively based on their varied levels of expertise within the organization, 2) the review and analysis of extant literature, 3) review of

existing organizational documents, 4) review of existing interviews done as part of the scenario planning process, and 5) the review and analysis of constructed scenarios. Also, several measures were enacted to promote trustworthiness and authenticity including utilizing a team of researchers and conducting replicability tests by members of the research team, triangulation of our accumulated data, an audit trail, use of a reflexive journals and member checking (see Lincoln & Guba, 1985).

Several findings in the current case study are important for the study of scenario planning as the development of leadership capability and capacity. Namely, the data revealed that a number of participants reported that their mental maps or *theory-in-use* (see: Argyris & Schon, 1974; Lynham, 2002) of the workings of the organization shifted from inside the organization to strategically thinking of the outside environment as a result of the scenario planning experience.

Additionally, team building was also noted as a benefit from participant experience. The most significant finding was that those in non-leadership positions reported that they could see into the heads of their leadership team for the first time and gained an understanding of the strategy developed for the organization.

Implications for of this case study for HRD includes a call for the inclusion of the building of leadership capability and capacity as a purpose for doing scenario planning in organizational settings. Another implication is to challenge other scholars to continue to engage in rigorous and systematic study of scenario planning to add to the knowledge of its utility in the field of HRD. Also, this study lends further evidence for the emergence of the construct of *scenario-based leadership* mentioned in earlier studies

(McWhorter, Lynham, Porter, Chermack & van der Merwe, 2007; McWhorter, Lynham & Porter, 2008).

VITA

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