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Applying Scenario Planning Across Multiple Levels of Analysis

Russell F. Korte

Abstract. Planning for an uncertain future is problematic yet necessary for organizations to remain viable. Scenario planning helps organizations to increase their capacity to learn and adapt as the future unfolds and results in strategies that more effectively help organizations prepare for an uncertain future. Because organizations are complex, multilevel systems, scenario planners must also focus the complexities of learning across multiple levels of analysis. Fostering the learning processes that support effective implementation of strategy across multiple levels of analysis requires attention to the elements and relationships that drive learning from one level to the next. Few strategies for learning fully articulate and integrate the characteristics of learning at different levels of analysis. This article identifies key elements and relationships constituting learning at multiple levels of analysis—individual, group, organization, and industry—and provides an integrated view of multilevel learning in organizational settings to guide and support strategic planning and implementation.

Keywords: *scenario planning; levels of analysis; learning in multiple levels*

Applying Scenario Planning Across Multiple Levels of Organization

Driven by the rapid pace of change and increasing uncertainty in the environment, improved organizational adaptability is the objective of many efforts to increase strategic learning capacity (Ackermann, Eden, & Brown, 2005; Barr, 1998; Grant, 2005; Lant, Milliken, & Batra, 1992; Schulz, 2001; Yorks, 2005). The typical list of factors driving change and contributing to organizations losing their competitive edge includes globalization, increasing environmental turbulence and volatility, hypercompetition, demographic diversity, and the explosion

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of information (Grant, 2005). Although these factors may offer a competitive advantage to some organizations, they also tend to reduce the room available to organizations to maneuver in the environment. In addition, these factors increase the pressure on organizations to diligently monitor, assess, and react faster with imperfect information (Prahalad & Hamel, 1990; Prange, 1999). The rapidity of change and complexity of systemic forces inside and outside organizations make it increasingly difficult to anticipate and plan for the future.

Several authors have described scenario planning as a strategic learning process to help organizations develop strategic plans (Schwartz, 1996; van der Heijden, 2005; van der Heijden, Bradfield, Burt, Cairns, & Wright, 2002). Specifically, van der Heijden et al. described strategic learning as the capability to perceive the systemic nature of the business environment and to effectively interpret and act on these perceptions. A major challenge for strategic learning is to accurately perceive organizational capabilities and anticipate the environmental changes on which to focus a strategic plan. Scenario planning helps the organization adapt more successfully to an uncertain future by preparing for a range of plausible futures. However, organizations are multilevel entities, and scholars characterize the learning process differently at different levels of analysis. This article explores these differences and the implications of scenario planning as a strategic learning tool used in organizations across multiple levels of analysis.

To begin, this article describes the general characteristics of strategy making in organizations, followed by a brief overview of multilevel analysis. The next section explores the characteristics of learning at different levels of analysis: individual, group, organization, and industry. The final section addresses the human resource development (HRD) implications of using scenario planning as a tool to enhance strategic learning in organizations at multiple levels of analysis.

General Characteristics of Strategy Making in Organizations

Organizational strategy has been variously described as a way to define a company and what business it is in (Andrews, 1971); a plan of how an individual, group, or organization will achieve its goals (Grant, 2005); an emerging pattern in a stream of organizational behavior (Mintzberg & Waters, 1985); and a cocreated process of innovation and discovery between the organization and external actors (Prahalad & Ramaswamy, 2004). These definitions illustrate wide-ranging views toward strategy—from an internal, deliberate planning process to an explanation of an unplanned emergent pattern of behavior. From most perspectives, the concept of strategic planning refers to planning for the future. Scenario planning, as a tool for developing strategy, promotes learning that will increase the effectiveness of strategy making by providing information, fostering insight, and promoting consensus (Schwartz, 1996; van der Heijden, 2005; van der Heijden et al., 2002).

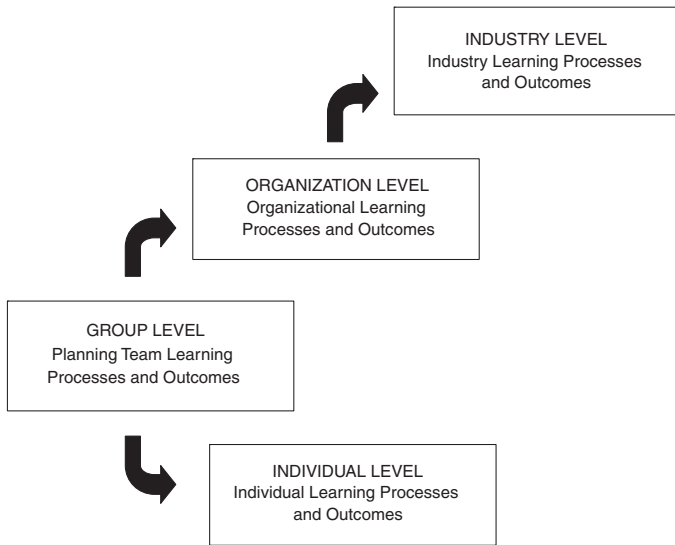


FIGURE 1: Implementing the Outcomes of Scenario Planning Across Levels of Analysis

In organizations, scenario planning most often occurs at the group level, in the realm of top management teams responsible for strategy making (van der Heijden, 2005). However, to be effective, the results of a scenario planning process conducted at the group level must enhance learning and build capability at the individual, organization, and, possibly, the industry levels of analysis (see Figure 1). Effective implementation across multiple levels of analysis is critical to a successful strategy (Grant, 2005).

Viewing organizations as multilevel systems requires that planners attend to the influences of unique elements within each level of analysis and attend to cross-level interactions. Analyzing a phenomenon, such as learning, in a multilevel system requires careful and appropriate articulation of the constructs, variables, and relationships within and between levels in the system (Kozlowski & Klein, 2000). The next section briefly describes the characteristics of multilevel analysis.

Overview of Multilevel Analysis

Scholars of organization studies urge researchers to address the phenomena of their research at multiple levels of analysis (House, Rousseau, & Thomas-Hunt, 1995; Kozlowski & Klein, 2000). They contend that the complexity and interdependent nature of organizational phenomena rarely fit into single-level

categories, and thus, research carried out at a single level necessarily overlooks the systemic relationships across levels and runs the risk of misspecification and misconstruction of concepts. House et al. (1995) stated that organizational phenomena were different from the phenomena traditionally studied by psychology, sociology, and economics, because organizational phenomena typically include factors linked across individual, group, and organizational levels. They also cautioned that building theories or models of organizational phenomena within the boundaries of a single level leads to an incomplete view of most organizational phenomena.

The factors constituting multilevel models of phenomena are (a) elemental factors (the lower-level building blocks determining the structure and function of higher-level constructs) and (b) interaction processes (the processes by which the elemental factors interact; House et al., 1995). For example, the individual cognitions, affects, and behaviors of group members as well as the enabling and constraining factors of the group's context constitute group learning—a higher-level construct than individual learning.

An important concept describing interactions across analysis levels is the concept of emergence. Emergence is the amplification of individual-level elemental factors through social and contextual interaction to produce higher-level phenomena that are unique and not reducible to the lower-level phenomena (Kozlowski & Klein, 2000). For example, team learning is a group-level phenomenon emerging from the diverse knowledge, negotiations, and consensus-building processes among individuals constituting the team (Fiol, 1995; Kasl, Marsick, & Dechant, 1997; Nonaka & Takeuchi, 1995). The learning outcome at the group level (e.g., team knowledge) includes the consensual parts of individual knowledge—not the totality of the knowledge held by the individuals of the team (Fiol, 1995). Learning at the next level of analysis—organizational learning—is a higher-level phenomenon emerging from the group level as a construct of knowledge embedded in a network of organizational relationships, tasks, tools, and processes for the purpose of improving performance (Argote & Ophir, 2005; DiBella & Nevis, 1998).

The immediate outcome of scenario planning described a phenomenon (team learning) emerging from the cognitions, affects, and behaviors of individuals on the planning team. Furthermore, if the learning is to be useful it must become embedded in the organization's set of relationships, tasks, tools, and processes. Applications of scenario planning in organizations should address these multiple levels of analysis and carefully consider the problems of linkage across levels (House et al., 1995). The primary concern is to avoid incorrect application of measures and constructs from one level to another.

From a systems perspective, HRD professionals have traditionally addressed organizational context as an important influence affecting the way individuals learn and work in organizations (Rummler & Brache, 1995; Swanson, 1996; Yorks, 2005). This systemic view necessarily encompasses multiple levels of

analysis, because changes at one level instigate related changes at other levels. For example, changing work processes without enabling changes in individuals will likely hamper the performance of the changed system (Yorks, 2005). Conversely, changing individuals without changing the design of the organization's systems and structure can impede performance as well.

To implement strategy effectively the learning outcomes or knowledge created by the planning team at the group level during the scenario planning process must be transferred to other individuals in the organization. The next section begins with a brief overview of learning across multiple levels of analysis, followed by an in-depth description of learning at the individual, group, organization, and industry levels. At each level, the processes and outcomes of learning are described as they relate to scenario planning.

Learning Across Multiple Levels of Analysis

Most definitions of learning include some reference to individual change or the increased potential for change (Billett, 2002; Illeris, 2002; Merriam & Caffarella, 1999; Tennant, 2006; Yang, 2003). The concept of change is characteristic of definitions of learning at the group, organization, and industry levels as well (Argote & Ophir, 2005; Fiol, 1995; Huber, 1991; Ingram, 2005; Schulz, 2005).

Scenario planning, as a strategic learning tool, is primarily a group-level process for generating strategy to enhance the organization's ability to adapt to changing environmental conditions at some future point (van der Heijden, 2005). To be effective for the organization, the knowledge created from this group-level process must be transformed into new practices, structures, and institutions at the organization and industry levels (see Figure 1).

Individual-Level Learning

Learning at the individual level has been heavily studied and theorized from a variety of perspectives (Illeris, 2002; Merriam & Caffarella, 1999; Yang, 2003). The model of learning guiding this discussion is grounded in a cognitive and sociocultural constructivist perspective (Billett, 2002). Individuals in the workplace engage in goal-directed activity while encountering various experiences and problems causing them to transform (explicitly or implicitly) new information into new knowledge structures or to link new information into their existing knowledge structures.

To effectively transfer the outcomes of scenario planning to the organization, individuals outside of the scenario planning group must receive and assimilate the knowledge created by the planning group into individual knowledge structures and give it personal meaning (Billett, 2002; Illeris, 2002). The confluence of this individual-level cognitive process with affective and social factors creates

relatively unique learning outcomes for each individual (Billett, 2002; Illeris, 2002). This complex, individual transformation process is the reason why the same experience can result in different interpretations among individuals. In the case of scenario planning, the outcomes of the team's learning process are transferred to other individuals in the organization and, subsequently, these outcomes are reinterpreted and reencoded individually.

At the individual level, the results of the scenario planning process are subject to the vagaries of individual learning including the effects of cognitive biases, framing, emotional influences, social norms, personal experience, and context (Illeris, 2002). Individuals implicitly and explicitly filter and alter information to fit existing knowledge structures (Bandura, 2001). This idiosyncratic learning is unavoidable and in some cases preferable—especially when it contributes to the insights of others.

Individual filtering and sense making are reasons why strategy does not disseminate consistently across individuals in the organization. Each individual reinterprets and recalculates the strategy to fit with his or her existing knowledge structures, mental models, and situations (Ackermann et al., 2005; Porac, Meindl, & Stubbart, 1996). This transfer process becomes critically important to strategy implementation, because individuals outside of the planning team do not have the benefit of the dialectic discussion and consensus building that led to the creation of the scenarios and strategy. Whereas the members of the planning team learned through discussion and consensus building, individuals outside of the planning team learn more commonly through social influence, power structures, and idiosyncratic cognitive processes transforming the outcomes of the planning team into idiosyncratic meaning at the individual level (Ackermann et al., 2005; Porac et al., 1996).

Individual-level implications for scenario planning. The variability of individuals across the organization imposes a formidable constraint on efforts to transfer the knowledge developed by the scenario planning team throughout the organization. This requires the planning team to consider how the knowledge will be communicated, interpreted, and used to implement strategy. As a core competency of HRD, training is an important method to disseminate knowledge to others in an organization. Other methods to facilitate learning and change may be required as well, depending on the beliefs, prior experiences, and capabilities of individuals in the organization.

Beyond the members of the organization's planning team are some key individuals in other groups whose understanding and commitment to organizational strategy is required. The further removed and differentiated individuals and groups are from the planning team, the more room for misinterpretation or reinterpretation (Ackermann et al., 2005). The more novel the outcomes of the planning process are to others in the organization, the greater the need to translate learning outcomes and transform mental models before others recognize

the relevance of the outcomes and commit to the plan (Carlile, 2004). It is critical for the planning team to understand how others will interpret the recommendations of the planning team, develop commitment to the plans, and take action (Ackermann et al., 2005; Porac et al., 1996). It is essential that key members of the organization understand and commit to acting on the results of the scenario planning process to successfully implement the strategy.

The next section looks at learning at the group level, where scenario planning typically occurs. The linkage between group-level learning and individual-level learning involves facilitating and aligning individual interpretation and sense making of the outcomes of the scenario planning process. It also involves the refinement of scenario planning outcomes based on feedback from individuals outside the planning team.

Group-Level Learning

As generally prescribed, scenario planning is a group-level learning process, whereby a planning team can systematically develop a deeper understanding of the business idea along with a set of plausible future states to which the organization needs to prepare (Schwartz, 1996; van der Heijden, 2005; van der Heijden et al., 2002). One of the key attributes of group-level learning is its dynamic nature, meaning that the conditions (elemental factors) of learning continuously change (Kasl et al., 1997). Also, an increased number of interactions among members of the team compound the complexity of group-level learning.

Each individual's acquired knowledge, as well as the meanings and attitudes he or she holds about the planning team, constitute one set of elemental factors (at the individual level) affecting team learning (at the group level). In a reciprocal manner, when individuals work together, group processes influence individuals toward alignment with others (Bandura, 1977, 1986). It is this reciprocal process between the individual and other members of the team that shapes both the individual's knowledge and the team's shared understanding. Because it is the outcomes that emerge from this group-learning process that influence organizations to prepare for future conditions, the composition of the planning team is an important consideration. Achieving the widest possible exploration of future issues is critical. For this reason, scenario planners include a remarkable person in the group to help them expand their thinking and challenge existing assumptions (van der Heijden et al., 2002).

Scenario planning teams comprising executive managers face unique challenges stemming from the characteristics of executives as individuals. These challenges include high levels of individualism and commitment to a personal vision (Katzenbach & Smith, 1993). Furthermore, it is important to understand how different members of the group focus on different information, how they develop different interpretations of information, and how many of these interpretations influence action (Porac et al., 1996; Schulz, 2005).

In addition to challenges posed by individual manager's characteristics, another set of elemental factors and interaction processes emerge from the group norms and relationships among team members and contribute to the context within which the team operates. This context also determines the opportunity available to individuals for expressing ideas and learning from each other. The well-known effects of influence and conformity expressed in the concept of groupthink (Janis, 1982), and the tendency to rely on existing skills and knowledge (Mintzberg & McHugh, 1985) tend to limit innovative thinking in a team. Diversity of perspectives and awareness of these tendencies can help the team minimize these biases.

The opportunity for learning varies among teams, depending on the context, interdependency, and quality of interaction among members of the team. As a result, learning in teams ranges from fragmented to synergistic. A supportive context, higher levels of interdependency and better interaction among members of the team foster the emergence of collective knowledge from individual knowledge (Kasl et al., 1997).

Scholars have described several key learning concepts that emerge at the group level, including transactive memory (Austin, 2003), team mental models (Klimoski & Mohammed, 1994), team learning (Edmondson, 1999), and collective mind (Weick & Roberts, 1993). A common theme among these concepts is that a group of individuals may combine their expertise in such a way that the team knows more than any one individual. For example, the concept of transactive memory includes two primary components: a structural component identifying who knows what among members of the team and a process component describing interactions among group members for knowledge sharing (Austin, 2003). The concept of the collective mind focuses on the interdependent behaviors of members of a group for enhancing efficiency and effectiveness (Weick & Roberts, 1993). Achieving this higher level of expertise requires high levels of interdependency as well as supportive interpersonal and contextual factors (Edmondson, 1999; Kasl et al., 1997). These concepts help explain the potential for increased performance through learning in teams. However, as Kasl et al. (1997) remind us, not all teams reach high levels of performance.

Arguably, teams are the most important performance entities in organizations (Hodgkinson, 2003; Katzenbach & Smith, 1993; Senge, 1991). Argote and Ophir (2005) summarized dozens of empirical studies of learning within and across groups in organizations. In their analysis, they looked at the processes of creating, retaining, and transferring knowledge, as well as the performance outcomes of these processes. From their analysis, they described a contingency approach whereby the effects of the nature of the knowledge, the degree of social interaction and fit between individuals, the type of tasks involved, the structure of social networks, and the degree of uncertainty influenced the amount of knowledge created, retained, and transferred in the group. Furthermore, Simons, Pelled, and Smith (1999) found that strategic planning team performance was also a curvilinear function of cognitive diversity and dialectical process. Too

little or too much diversity among members of the team hampered performance requiring a fine balance between dialectical challenge and consensus. The literature on strategy process advised planners to choose team members who can bring various experiences to the table without risking dissensus and disengagement among members (Schweiger, Sandberg, & Rechner, 1989; Simons et al., 1999).

This challenge requires that a scenario planning team be committed to having adequate time for deep reflection, along with the courage and openness for critically challenging assumptions, beliefs, values, and the norms of their experiences and culture—neither an easy task nor a quick process. Therefore, a continuous, incremental planning process may produce better outcomes.

Group-level implications for scenario planning. Scenario planning in organizational settings is primarily a process designed for a team—most often a senior management team. Van der Heijden et al. (2002) recommended diversity, but not too much. More diversity requires more resources and time to reach consensus in the group and increases the risk of disengagement among members (Simons et al., 1999). One advantage of creating a range of scenarios is that it takes some of the pressure off of consensus building by providing multiple outcomes to satisfy diverse perspectives (Kahane, 1992). The possibility that team members can find some dimension on which to agree increases with a range of scenarios, as well as sound reasoning, discussion, and reflection. However, the results of the learning stemming from the scenario planning process must achieve some level of consensus if it is to lead to action.

The rigor of the scenario planning process requires participants to coherently explain their reasoning behind plans, support their reasons with evidence and robust data, and allow for uncertainty by including contingency plans. As a method of learning to improve organizational adaptability, scenario planning depends on the ability of the team to imagine, articulate, and agree on a range of plausible futures that will include some form of the future that ultimately unfolds (Schwartz, 1996; van der Heijden, 2005).

Strategic learning from scenario planning is about generating new insight and requires an environment conducive to questioning and challenging. Tactics of framing, reframing, experimenting, crossing boundaries, and integrating perspectives facilitate a high-performance team environment (Kasl et al., 1997). However, in the team setting, contextual, interpersonal, political, and idiosyncratic factors tend to limit the exchange of experiences, perspectives, challenges, and questions necessary to develop a broad set of scenarios. And these political and other factors tend to confound attempts to generate knowledge and strategy beyond their imposed limitations.

The scenario planning team faces numerous challenges based on the nature of the knowledge possessed by members, the interaction and fit between individuals, the type of tasks involved, and the degree of uncertainty in the environment. Furthermore, what is learned by the scenario planning team must be

transferred to other individuals and groups in the organization. Enhancing organization-level learning is one of the primary goals of the scenario planning process.

Organization-Level Learning

Scholars have debated the concept of organizational learning for decades. Prange (1999) and Huysman (1999) described numerous problems in the literature regarding the concept of learning at the organization level. Many of these problems stem from misspecification of the construct, usually attributing individual-level elements and processes to the organization (Huysman, 1999; Prange, 1999). Prahalad and Hamel (2000) viewed organizational learning as the creation of core competencies—the collective (emergent) capabilities of the organization embedded in the organization's culture. This article views organizational learning as an emergent process defined as the embedding of collective knowledge and skills into organizational repositories, such as relationships, routines, practices, and culture (Schulz, 2005).

Elkjaer (1999) proposed that by embedding knowledge and skills in the routines, practices, and culture of the organization, the organization affords individuals access to expertise for solving problems, thereby relying less on individual expertise to function. Furthermore, he theorized that the information and competencies embedded in the organization could help individuals align their understanding and efforts across the organization with the organization's strategic model.

The embedded knowledge already held by the organization can be a constraint or enabler of new learning at multiple levels (Schulz, 2005). Changing competencies, practices, and culture requires a critical mass of involvement and commitment from individuals and groups across the organization (Ackermann et al., 2005; Yorks, 2005). As Yorks (2005) pointed out, simply changing routines and practices without corresponding changes in groups and individuals hampers performance. Cultural changes are even more difficult. For example, Schein (1992) described the difficulties of addressing deeply held assumptions in his model of organizational culture, and Argyris and Schon (1996) described the defensiveness inherent in organizational learning. Along with assessing and absorbing new information, the organization's culture and knowledge, embedded in its repositories, mediates organizational learning by influencing whether the organization is open to new experience (Schulz, 2005). These constraints on organizational learning impose difficult challenges for implementing the results of the scenario planning process.

Organization-level implications for scenario planning. HRD professionals focus on change to organizational systems through interventions based on organization development. A strong impetus for change can come from the learning developed in the scenario planning process. To make scenario planning effective, not only

must the planning team develop a plausible set of scenarios but they must also develop plans of action to develop and embed the required competencies in the organization. This effort could be undertaken either incrementally (as adjustment) or radically (as reorientation) or some blend of each (Burgelman, 1996). This effort becomes a complex process of operationalizing the learning of the planning team into the relationships, routines, practices, and culture of the organization.

Scenario planning as a proactive and strategic learning strategy strives to head off the ill effects of inertia in organizations by increasing the cultural propensity for adaptation (Galer & van der Heijden, 2001) as well as embedding this propensity in the practices and routines throughout the organization. A benefit of scenario planning is identifying potential environmental shocks and instigating learning before the shock occurs—at which point adaptation may be very costly or too late (Galer & van der Heijden, 2001).

The required competencies identified in the scenario planning process include not only individual and group learning but also structural and process changes (defined as organizational learning) to the organization (Schulz, 2005). The domain of HRD includes learning and contextual realignment to help organizations adapt more successfully to future changes in the environment.

Industry-Level Learning

The industry level of analysis has become a rather broad landscape for learning among organizations, including characteristics and the various components of the environment within which individual organizations interact. Identifying the driving forces and uncertainties in the environment is a key process in scenario planning. Van der Heijden et al. (2002) identified the targets of this analysis to include the societal, technological, economic, environmental, and political (STEEP) forces in the environment. Multilevel analysis extends this effort to identify the linkages between the elements within and across levels of analysis (House et al., 1995; Kozlowski & Klein, 2000). This section describes some of the unique elements and processes characteristic of the industry level of analysis.

Over the past two decades, much of the academic and managerial thinking has moved from an analysis of individual, dyadic interactions between organizations to the more complex and ongoing relationships among various organizations, also known as interfirm or interorganizational relations and alliances (Ritter & Gemunden, 2003).

Continuing the description of scenario planning as a strategic learning process across multiple levels of analysis, this discussion of the application of scenario planning at the industry level draws from the literature on interorganizational learning. Ingram (2005) defined interorganizational learning as the transfer of knowledge between organizations. Lubatkin, Florin, and Lane (2001) extended that definition to include the creation of new knowledge among organizations.

Scholars have identified several types of interorganizational structures based on the objectives of the organizations involved. For example, organizations might

coalesce around supplier–buyer relationships, outsourcing or distribution agreements, joint ventures, collaborative research and development projects, manufacturing arrangements, cross-selling, or franchising (Grant & Baden-Fuller, 2004). Overall, the structure of the interdependent relations among organizations tends to be decentralized and formed relatively spontaneously. Important characteristics of these structures for learning are the levels of trust, goal congruence, and shared interpretive schemes and meanings among the members (Greenwood & Hinings, 1993; Rivera & Rogers, 2006).

A critical first step in analyzing the industry level for scenario planning is the need to decide where to draw the boundaries of the focal industry. Porter (1980) stressed that a key challenge is to avoid drawing the boundaries of the industry too narrowly—missing a source of future competition for the organization. Yet the primary elements of Porter’s industry model were essentially economic—focused on resources and competitive dynamics among firms. In addition to the economic elements in an industry, the institutional characteristics of the industry affect the industry’s interactions, learnings, and strategies (Scott, 2003).

Narayanan and Fahey (2006) identified three links between organizational strategy and the institutional environment. Despite the fact that Narayanan and Fahey concentrated on economic factors (capital flows, transaction costs, and competition), their recognition of the institutional underpinnings of an industry broadened the focus of scenario planning to include not only the overt structural, market, and technological characteristics of an industry but also the covert assumptions, beliefs, values, and norms governing the dynamics of an industry, such as, the industry’s institutional environment or framework. Scott (2003) defined institutions as resilient social structures comprising interdependent cultural-cognitive, normative, and regulative elements, along with the material resources and activities sustaining these elements. A major consideration for planners is to identify which institutional factors take priority. Identifying, articulating, and prioritizing interorganizational elements and processes that become the important driving forces of the industry are the objectives of developing a set of rigorous scenarios.

Interorganizational learning is highly dependent on the type and quality of the relationships between sender and receiver organizations (Greve, 2005; Ingram, 2005). Factors that facilitate relationships, and therefore interorganizational learning, are common ownership, higher levels of communication, trust, empathy, familiarity, physical proximity, interaction, and network structures. These factors could also make organizations into competitors, suggesting that organizations might learn the most from their competition. However, competitiveness impedes learning among organizations—creating tension between efforts to learn through collaboration and efforts to safeguard knowledge as a strategic asset.

The relationships and competitive dynamics in an industry produce characteristics of interorganizational learning unique to this level of analysis. One characteristic, known as the Red Queen effect, describes industries in which the knowledge that flows from one organization to a competitor makes the competitor stronger, thereby significantly reducing the competitive advantage of the

sender. Always having to move faster and faster to maintain competitiveness is the result of this effect. Another characteristic of interorganizational learning manifests itself as learning races or first-mover effects. This condition exists in industries where the winner takes all and the first organization to market can effectively shut out competitors. Finally, uncertainty can foster a herd mentality: the phenomenon of industries and organizations aggressively copying one another. The risk with a herd mentality is the uncertainty of what to copy. If knowledge is embedded variously in people, tools, tasks, and culture, it becomes difficult for the receiving organization to identify which repositories to copy. For example, the practice of hiring away key personnel from one organization may not achieve the desired competitive advantage if important information resides in the practices and culture of the targeted organization more than in its people (Pfeffer, 2001).

Learning at this level also can be vicarious in the sense that organizations observe the actions and consequences of other organizations and then choose what to adopt and what not to adopt based on their relationships with and perceptions of the focal organization. Whether an organization values new knowledge created by another organization depends on how it perceives this knowledge, the relationship between the organizations, and the status of the sending organization. It also depends on the receiving organization's current capacity to learn, the desire of the organization to learn, and the organization's flexibility toward learning (Greve, 2005; Ingram, 2005). The relationships between the internal and external characteristics of organizations are important linkages between the organization and industry levels of analysis.

Barriers to interorganizational learning stem from an organization's efforts to prevent leaking knowledge to competitors and the difficulty of absorbing new knowledge into existing organizational structures (Greve, 2005). In addition to these limitations regarding between-firm interactions, there are intraorganizational limitations in the form of the organization's path-dependent and self-fulfilling experiences and the overall environmental limitations imposed by institutional constraints (Baum & Ingram, 2000).

Industry-level implications for scenario planning. As described above, formidable constraints encumber organizations' abilities to learn from one another. Competition and the institutional environment of an industry are key elements that affect the relationships among organizations and learning at the industry level. One of the key goals of scenario planning is the development of a competitive business idea to guide future development of the organization and industries where knowledge is a competitive advantage; enhancing competitiveness is antithetical to knowledge sharing or learning between firms.

Industry-level scenarios requiring the close cooperation and sharing of knowledge among organizations would defeat the purpose of striving for competitive advantage. Research on interorganizational learning has found that organizations tend to cooperate on matters of public policy, not on proprietary

or private matters of the organization (Ingram, 2005), for fear of losing ground to the competition.

Within the tensions of industry competition, scenario planning could provide benefit at the industry level by focusing more on institutional and macro policy issues that would favor the industry as a whole without privileging one organization over another. This requires HRD professionals engaged in scenario planning to include institutional as well as industry-level economic factors in their scenario plans. Viewing an organization as one of many interdependent entities embedded in an institutional environment could enrich the scenario planning process.

As can be seen from the above descriptions of learning at four levels of analysis—individual, group, organization, and industry—there are distinct differences in the characteristics of learning at each level. Although this has been a cursory review of the complexity of multilevel learning in organizational contexts, it is apparent that the outcomes of scenario planning typically developed by a strategic planning team need to take a multilevel view of the various relationships among elements at multiple levels of analysis.

Summary of Scenario Planning and Learning at Multiple Levels of Analysis

When one looks at the conceptualization of learning at various levels of analysis, key learning features stand out at each level. Beginning at the individual level and moving through the group and organizational levels to the industry level, the concept of learning becomes more operationalized as changes to practices, routines, relations, and institutional dynamics (see Table 1). To meet the requirements for action in implementing strategy, it is important for scenario planners to consider how knowledge is created and encoded by individuals, conceived and transmitted among groups, embedded in organizations, and shared across an industry.

The implications of multilevel analysis push scenario planners to go beyond analyzing a set of variables or elements known as STEEP—societal, technological, economic, environmental, and political forces (Schwartz, 1996; van der Heijden et al., 2002). Planners must analyze the processes linking various elements at different levels and understand that these links between elements across levels of analysis contribute to the driving factors and uncertainties comprising scenarios and strategies. Understanding these elements and links is essential for organizations to develop and implement the necessary capabilities and actions to survive into the future.

Learning in organizations is a complex, multilevel phenomenon that includes the planned and unplanned creation, retention, and dissemination of knowledge. Applying the results of scenario planning at multiple levels of analysis includes managing the learning processes at each level. At the group level, the scenario planning team creates and agrees on (ideally) a set of plausible future scenarios

TABLE 1: Multilevel Analysis of Strategic Learning From Scenario Planning in Organizations

Levels of Analysis	Learning Processes	Learning Outcomes
Individual learning	Process information	Increased understanding
	Construct knowledge	Commitment to strategy
	Develop understanding	
Group learning	Challenge assumptions	Broad range of plausible scenarios
	Formulate alternative views of the future	Consensus and engagement
	Build consensus	Strategic plans
Organizational learning	Improve processes	Enhanced routines, practices, culture
	Change culture	Enhanced capabilities
	Embed expertise	Improved performance and adaptability
Industry learning	Observe or collaborate with firms	Increased innovation
		Increased competitiveness
	Change the environment	Favorable industry policies Sustainable institutional environment

to which the organization must adapt. Next, this knowledge must be transferred to other key individuals and groups in the organization to facilitate learning beyond the planning team. Then these individuals and groups must transform this knowledge into practice and embed these practices in the organization. Ultimately, the organization must manage its capabilities to survive and compete within the context of other organizations at the industry level.

Implications of Scenario Planning as a Strategic Learning Tool for HRD

An often-stated goal of HRD is increasing the organization's capability to adapt (Gilley & Maycunich, 2000; Yorks, 2005). As a learning tool designed to increase an organization's capability to adapt, scenario planning has much to offer HRD professionals.

As Weick and Sutcliffe (2001) found in their study of high-reliability organizations, the best-performing organizations depend on a high level of resiliency, because mistakes and difficulties occur and not all outcomes can be predicted or recognized. These are the uncertainties that scenario planners factor into their analyses. Other characteristics of these organizations include (a) a reluctance to simplify perceptions and mental models, (b) a focus on operations, and (c) deference to expertise wherever it exists—inside or outside of the organization. Some of these conclusions are counterintuitive to strategic planning teams. However, tools such as scenario planning foster these characteristics.

An organization's future viability involves a complex synergy between continuous learning and performance—both of which are core functions of HRD (Swanson & Holton, 2001). Enhancing learning and performance through the scenario planning process directly supports the goal of HRD to contribute to the strategic mission of the organization.

The concept of strategic learning in organizations is complex. Not only is there debate about what constitutes strategy and how it should be developed, there are multiple confounding factors affecting learning across levels of analysis. Furthermore, there are significant barriers at each level of analysis that can undermine the proposed benefits of scenario planning during the implementation of organizational strategy.

HRD professionals using scenario planning must be adept at facilitating group process and consensus building (group level), learning and commitment (individual level), process improvement and cultural change (organization level), and understanding of competitive and institutional dynamics (industry level). Despite the separate treatment of these elements and relationships in this article, they are highly interdependent and mutually constituted. These elements and processes become important for implementing the organizational changes prescribed by scenario planning—the changes designed to help the organization adapt to an uncertain future. Without effective implementation, the outcomes of scenario planning fall short of their potential to help organizations survive and thrive.

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