PROCESS LEVEL SCENARIO PLANNING

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ABSTRACT

Building on previous work that differentiated between vision and decision-driven scenario planning, this article provides the argument for including a distinction among levels of the organization when considering scenario application. With an aim of describing more effective scenario planning practice, scenarios are described as potential tools for process level interventions and knowledge sharing in processes executed by knowledge intensive teams. Examples are provided that document the utility of scenarios used in this domain, and the implications for managers are explored. Conclusions and further research suggestions are outlined that would provide an agenda for evaluating the use of scenarios at the process level of performance.

INTRODUCTION

Scenario planning has traditionally focused on long-term strategic issues. Several companies have had considerable success using scenario planning to explore and investigate plausible future environments. These companies, however, have typically had their successes using scenarios at a macro level. That is, scenario planning has been traditionally thought of as a tool that provides a means for considering multiple futures in relation to social, technological, economic, and political changes. It has been suggested that several cases of scenario planning failure have involved issues and situations in which the core problems were more specific and involved a shorter time frame (Courtney, 2003).

This article explores vision-driven and decision-driven scenarios drawing from Courntey's (2003) work, and expands upon it by introducing the three levels of performance advocated by Rummler and Brache (1995). The argument is made that vision-driven scenarios are most appropriately applied to issues concerning the organization level, and that decision-driven scenarios may find their best use in process level issues and decisions. Scenario planning literature provides only a few examples of process level interventions, thus, the few available case studies are used to support the argument, and a call for further investigation is provided along with research suggestions that may verify or refute the use of scenarios for process level issues and interventions.

SCENARIOS AND SCENARIO PLANNING

Some definitions and background are offered to clarify the intent and focus of scenario planning interventions. Scenarios and scenario planning have been defined in several ways:

> *"A scenario is an internally consistent view of what the future might turn out to be - not a forecast, but one possible future outcome" (Porter, 1985, p. 63).*
>
> *"A scenario is a tool for ordering one's perceptions about alternative future environments in which one's decisions might be played out" (Schwartz, 1991, p. 45).*
>
> *"Scenario planning is that part of strategic planning which relates to the tools and technologies for managing the uncertainties of the future" (Ringland, 1998, p. 83).*
>
> *"Scenario planning is a disciplined methodology for imagining possible futures in which organizational decisions may be played out" (Schoemaker, 1995, p. 13).*
>
> *"Scenario planning is 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" (Chermack 2005, p. 61).*

The key outputs of scenario planning embedded in Chermack's (2005) definition are plausible alternative stories about the future, dialogue within the organization, learning, altered mental models, better decisions, and improved performance. These outcomes are a synthesis of multiple different definitions of scenario planning. For further discussion, see (Chermack, 2005).

Another important point of clarification is the distinction between scenario planning and scenario building. For the purposes of this article, scenario planning is taken to indicate the overarching process of positing plausible alternative future environments and using these environments for strategy development. Scenario building is taken to mean the process of constructing the stories themselves, as a component of the larger scenario planning process. As this article focuses on two key types of scenarios, the bulk of the content offered relates to the process of scenario building, as it is argued that different types of scenarios should be used for specific situations and circumstances.

Vision Driven Scenarios

Vision driven scenarios are aimed at identifying assumptions at a macro level. This means that considerable time is spent exploring trends and forces in the environment. The STEEP (Social, Technological, Environmental, Economic, and Political) forces are commonly considered as well

as those items coming from in-depth interviews with executives, managers and other organization members. Courtney (2003) differentiated between vision-driven and decision-driven scenarios, arguing that scenario planning is often used at a macro level in cases where innovative thinking about unpredictable forces is called for. He stated: "Vision-driven scenarios help management teams think 'outside the box' and question their assumptions about the future" (Courtney, 2003, 14).

Decision Driven Scenarios

Vision driven scenarios, however, "are not usually tied to any near-term strategic decisions. Decision-driven scenarios, on the other hand, are used to inform a well-specified strategic choice -- a choice where the 'best' option is unclear due to uncertainty over the impact of that choice" (2003, p. 15). Decision driven scenarios are used to address more specific issues such as new product launches, or choices such as whether or not to build new plants (Courtney, 2003). Courtney (2003) argued that the broad ranging vision drive scenarios are not appropriate tools when facing slightly more near-term decisions, suggesting that using the wrong type of scenarios often leads to failure in the process. These two general forms of scenarios are presented in Table 1 with further elaboration upon the nature of the processes and how the scenarios can be explicitly used.

While the field of futures studies has not developed to a point of having a well-defined lexicon of terms and their precise meanings in the context of futures work, an opportunity presents itself in the presentation of Courtney's (2003) ideas. In the spirit of working toward a more established lexicon of terms, it makes more sense in the context of futures work to substitute the terms "Macro" and "Micro" for the terms "Vision" and "Decision". These adjustments should be noted as a modification to Courtney's work in Table 1.

The reasoning behind this substitution is simple: decisions should be an implication of ANY scenario work, and visioning work can be a part of scenario work no matter the context. For example, the Mont Fleur scenarios, which would be categorized as "vision-driven" by Courtney, inherently involved explicit decisions that had implications for the future of South Africa. Thus, it seems misleading to differentiate scenarios with these terminologies. The terms macro and micro seem to capture the notion that types of scenarios can be formulated along a continuum, rather than to suggest that they are discretely different types.

The basis of Courtney's (2003) differentiation between these two kinds of scenarios is rooted in the failure of some scenario planning projects in which the scope of the project and the problem for which it was intended to provide a potential solution were mismatched. It is therefore clearly important for executives and managers using scenarios to first consider the time frame in which they are working and the nature of the problem that needs to be solved. If executives and managers are dealing with near-term strategic decisions, the scenario planning process should take a different path than those managers seeking a more general view of the future as Courtney has pointed out.

Table 1: Vision-driven vs. decision-driven scenarios		
	Macro scenarios	Micro scenarios
Nature of scenarios	• Emphasis on broad, macroeconomicand global drivers of change • Longer term (5-10-20+ years)	• Focused on specific uncertainties that drive decision • Generally shorter term (driven by time necessary to evaluate pay-off decision)
Nature of the development process	• Emphasis on divergent thinking and broad perspectives • Heavy reliance on experts, consultants and facilitators	• Data-driven and analytical when possible • Heavy reliance on internal expertise and industry experts (unless major confidentiality concerns)
How scenarios are used	• Generate new strategic ideas • Develop shared sense of possible futures and need for change • Launch follow-on projects and analyses to further develop implications of the scenarios	• Test options for a specific decision against the range of potential outcomes and develop implications for which option to choose
(Based on Courtney, 2003).		

Information Stickiness

A further important point can be made in the logical argument for decision-driven scenarios. Organizations are increasingly relying on knowledge intensive processes managed and operated by interdisciplinary teams (Ford & Sterman, 1998). Stickiness refers to the difficulty in information transfer between or among people. Von Hippel (1998) defined "stickiness" as "the incremental expenditure required to transfer that unit of information to a specified locus in a form useable by a given information seeker. When this cost is low, information stickiness is low; when it is high, stickiness is high" (Von Hippel, 1998, p. 629). Discussions of stickiness have included the simple recognition that there is a cost associated with the transfer of information, and second, in differentiating stickiness and friction (Ford & Sterman, 1998). That information becomes "sticky" is important in decision-making because often expertise or knowledge of a specific domain is required for decisions. For example, McKinsey consultants who are on call will fly anywhere in the world to make their expertise available are a result of the fact that knowledge becomes incredibly sticky and an example that the costs associated with transferring the information or knowledge can become quite high.

Stickiness is the core characteristic of specialized, personal, tacit knowledge that inhibits easy transfer (Szulanski, 1996; von Hippel, 1998; 1994). Stickiness refers to the general difficulty

in transferring tacit knowledge and has been defined as "the incremental expenditure required to transfer that unit of information to a specified locus in a form useable by a given information seeker. When this cost is low, information stickiness is low; when it is high, stickiness is high" (von Hippel, 1998, p. 629).

Research on knowledge stickiness.

In an examination of knowledge stickiness, Szulankski (1996) identified several important characteristics that affect the knowledge transfer process:

- *Characteristics of knowledge transferred*
- *Characteristics of the source of knowledge*
- *Characteristics of the recipient of knowledge*
- *Characteristics of the context*

Szulanski (1996) then conducted research to test which of these characteristics were most important in inhibiting knowledge transfer. The findings were that "the three most important origins of stickiness are the lack of absorptive capacity of the recipient, causal ambiguity, and an arduous relationship between the source and the recipient" (Szulanski, 1996, p. 36).

Lack of absorptive capacity of the recipient.

Cohen and Levinthal (1990) suggested that recipients might simply lack the ability to absorb new knowledge based on their preexisting knowledge. That is, individuals absorb, assimilate, and apply new knowledge based on their previous experiences and knowledge base.

Causal ambiguity.

Lippman and Rumlet (1982) argued that difficulty in transferring tacit knowledge is likely a result of ambiguity about the elements of the process or task to be understood and how they interact. Additionally, it has been argued that causal ambiguity is a result of a failure to view the process or task from a systems perspective (Sweeney & Sterman, 2000).

An arduous relationship between source and recipient.

Nonaka (1994) suggested that knowledge transfer requires several interactions between the expert and novice and that the success of the exchange of knowledge rests heavily on the nature of the relationship between the source unit and the recipient unit.

Addressing the Origins of Stickiness

Scenarios and scenario planning are posited as tools that can solve these three origins of stickiness by: 1) sharing and reconstructing mental models, leading to increased recipient capacity and 2) utilizing a process that demands close and frequent interaction between the novice and the expert. Each of these will be reviewed in further detail.

Sharing and Reconstructing Mental Models.

Allee (1997) stated that: "another powerful collaborative learning and knowledge-creation process is scenario building. Scenario building can help companies rethink much more than long-term strategy. It can help a company reframe their identity, their operating assumptions, their values, and their vision for the future" (p. 179). Senge (1994) identified three stages of an effective organizational learning process: 1) mapping mental models, 2) challenging mental models, and 3) improving mental models. Scenario planning has been shown to meet all three of these stages (Georgantzas & Acar, 1995). The planners at Royal Dutch/Shell Oil had several insights as they pioneered the scenario planning technique. After becoming masters at designing technically magnificent scenarios they realized that by focusing on the scenarios themselves, they were overlooking the core purpose of their work -- to alter the mental models of the management teams for whom they were developing plans (Senge, 1994). Thus, it can be argued that scenario projects that fail, often fail because client organizations do not have the mental model that allows them to comprehend uncertainty, or a serious threat to their organization. Therefore a core aim of the scenario planning process is to alter the mental models of managers.

Close and frequent interaction between novice and expert.

By reducing the cost of information transfer, in theory, decisions can be made more effectively and efficiently. Scenarios and scenario planning seem to address information stickiness by providing a forum for multiple individuals to develop similar expertise about the potentials of the organization. The strategic conversation (van der Heijden, 1997) is one example of how developing a shared mental model, and thus a shared language, can reduce the stickiness of information within the organization. The process of creating a shared mental model facilitates the process of information transfer. A scenario planning project can last anywhere from a one-week workshop to a multi-year process. While this time frame will naturally fall closer to one-week in decision-driven scenario situations, the nature of the process itself requires dialogue and intense interaction among the participants relevant to the decision under examination. By requiring such frequent and intense interaction, scenario planning reduces the cost of information transfer, making information less sticky.

LEVELS OF UNCERTAINTY

Courtney (2003) also devised a simple classification system for assessing uncertainty in relation to scenario planning. Level 1 uncertainties are almost irrelevant. That is, these uncertainties are important to consider, but the impact of either potential polar event may not, in fact, drastically affect the outcome of the decision. "McDonald's, for example, generally faces level 1 uncertainty when it makes its US restaurant location decisions…dominant strategy choices can be identified" (Courtney, 2003, p. 16). Level 2 uncertainties occur when multiple futures can be identified, one of which will occur. "For example, investors in the US stock market faces level 2 uncertainty in trying to determine the identity of the next President of the USA throughout the fall of 2000" (Courtney, 2003, p. 16). Level 3 uncertainties introduce a range of possible futures into the equation. In level 3 uncertainty situations, one can identify a range of possible future outcomes, say, for example "consumer demand for new products and services" (Courtney, 2003, p. 19), but can only estimate that the consumer demand increase could be from 5 to 40 percent. Level 4 uncertainties introduce true ambiguity into the decision making dilemma. These uncertainties are "both unknown and unknowable" (Courtney, 2003, p. 20). That is, a range of possible future outcomes cannot be identified for these kinds of uncertainties. Examples of level 4 uncertainties include the events of September 11, 2001. "In the immediate aftermath of the horrific terrorist attacks that occurred on 11 September, even the most prescient security experts could not confidently bound the range of future terrorist activity" (Courtney, 2003, p. 20).

Courtney has neatly divided varying levels of uncertainty into these four levels. Some insightful reviews of this work have suggested that a better term that would more accurately describe varying uncertainty would be the term "degree". Building on Courtney's idea, we suggest that to speak of uncertainty in terms of the degree of uncertainty more accurately captures the nature of the environments in which futurists work, and the scenarios that they build. It is also important to consider that it is possible to have different degrees of uncertainty in different contexts and time scales. For example, one might encounter a short time frame with a uncertainty at the fourth degree (as in a war zone, or natural disaster), and one can encounter long-term decisions with uncertainty at a second or third degree (as in many of the Royal Dutch / Shell examples among many others). These adjustments to Courtney's work are also reflected in Table 2.

These degrees of uncertainty help to frame the appropriate choice of vision or decision driven scenarios. While Courtney (2003) stated that micro (or decision-driven) scenarios could appropriately address any of the four levels of uncertainty, the argument presented in this article suggests that micro scenarios might most effectively be used in situations facing uncertainties at degrees of one or two. Further, macro scenarios might most effectively be used to address uncertainties at degrees three or four.

Table 2: Degrees of uncertainty		
Degree of Uncertainty	Description	Example Sources of Uncertainty
1	A clear enough future: can define point forecasts that are "close enough" for the decision at hand	• Returns on "common" investments in mature, stable markets • Customer and competitor reactions to strategies that reposition well-established brands
2	Alternate futures: can define a limited set of possible future outcomes, one of which will occur (scenarios capture a range of alternatives -- argument against forecasts)	• Potential regulatory, legislative or judicial changes • Unpredictable competitor moves • All-or-nothing industry standards competition
3	A range of futures: can define a range of possible future outcomes (scenarios capture a range of alternatives -- argument against forecasts)	• Demand for new products or services • New technology performance and adoption rates • Unstable macroeconomic conditions
4	True ambiguity: cannot even define a range of possible future outcomes	• The outcomes of major technological, economic or social discontinuities • Market evolution in markets that are just beginning to form
(Based on Courtney, 2003).		

Thus, another interpretation of the use of specific forms of scenarios for addressing specific degrees of uncertainties is found in Table 3.

Table 3: Types of scenarios for Uncertainty Levels		
Degree of Uncertainty	Type of Scenario	Rationale
1	Micro	• If scenarios are used at all, they must be focused, short-term, and must be developed quickly at a low cost.
2	Micro	• Significant risk is present, but a precise number of outcomes can be projected. The most effective application of decision-driven scenarios.
3	Macro / Micro	• Both scenarios types are appropriate, but outcomes outside of an assumed range must be considered.
4	Macro	• Genuine ambiguity is prevalent and scenarios must illuminate an unknown range of possible outcomes. Plausibility is the key to stretching organizational assumptions.

Addressing First Degree Uncertainties

Addressing first degree uncertainties often may not even require the use of scenarios. Risks are generally very low in level one situations and forecasting is an appropriate approach to considering multiple plausible alternative future outcomes. However, depending upon the issue, micro scenarios may provide useful insight if they can be developed quickly and at a low cost.

Addressing Second Degree Uncertainties

Second degree uncertainties are prime for the use of micro scenarios. These uncertainties are considerable enough to introduce significant risk into the decision-making process, but a limited number of future outcomes can be defined. These situations also allow for a fair determination that one of a small number of outcomes will actually occur. Thus, a set number of possibilities allows planners and decision-makers to know the range in which the actual outcome will fall.

Addressing Third Degree Uncertainties

Third degree uncertainties introduce a greater level of risk. While the range of possibilities can be generally assumed, planners working with level three uncertainties must at least begin thinking about the possibilities of outcomes falling completely outside of the assumed range. Macro and micro scenario types are both appropriate when considering third degree uncertainties because there is usually a more focused issued with which to deal, but the number of potential outcomes is still relatively manageable.

Addressing Fourth Degree Uncertainties

Macro scenario planning is really the only appropriate scenario method for facing degree four uncertainties. These uncertainties introduce genuine ambiguity into the planning equation, and a range of possible future outcomes cannot be defined. Thus, planners are left to the ultimate test of their creative devices -- to provide scenarios that cover the widest range of possibilities, while providing plausibility and a challenge to organization decision-makers and managers. Often there are considerable problems encountered even with the use of scenarios in situations involving fourth degree uncertainty.

Summary

To briefly summarize, micro scenarios seem to be best suited to assess first and second degrees of uncertainties, while macro scenarios seem best suited to address uncertainties at the third

and fourth degrees. A further concern about appropriate scenario use is introduced in the consideration that there are multiple levels within the organization.

LEVELS OF PERFORMANCE

Rummler & Brache provided three levels of performance that must be considered when working to improve performance in organizations. Regarding the link between performance and strategy, Rummler & Brache stated: "The most powerful strategy implementation tools we have found are those that help us effectively design and manage performance at the organization, process and job/performer levels" (1995, p. 84). A clear strategy for evaluating the outcomes of the scenario planning processes is to evaluate changes in performance at these three levels. But these three levels are also useful to categorize varying types of scenarios and assess their uses.

The Organization Level

Rummler and Brache (1995) defined performance at the organizational level in terms of three core variables, namely, 1) organization goals 2) organization design and 3) organization management. Organization goals frequently include a focus on productivity, cycle time, cost, and profit improvement efforts. Performance focused analysts "design an organization that enables the goals to be met" (Rummler & Brache, 1995, p. 37), thus a focus on the input-output relationships within the organization allow a design that accommodates and supports the organization goals. Goals, performance, resources and interfaces between functions are all areas requiring frequent assessment "help identify what needs to get done (goals), the relationships necessary to get it done (design), and the practices that remove the impediments to getting it done (management) (Rummler & Brache, 1995, p. 43). The organization level of performance provides the foundation for understanding, analyzing and managing performance at the process and individual levels.

The Process Level

Commonly viewed as how work is accomplished, processes can be more specifically defined as value chains in which each step adds value to the previous step. Based on a view that effective processes produce effective organizations, Rummler & Brache (1995) asserted that process goals, design, and management are the key variables to address for improving process performance. Process goals are considered sub-goals of organization goals, and should be designed to efficiently convert process inputs to process outputs. Managing, analyzing and adjusting processes goals, performance, resources and interfaces ensure the maintenance of high levels of process performance (Rummler & Brache, 1995). Targeted as the level with the greatest

opportunity to contribute to performance improvement, the process level is largely ignored, and often misunderstood.

The Job/Performer Level

Jobs must be designed to support process steps, enabling the achievement of process goals, and in turn, organization goals. Job goals must be aligned with process goals and jobs must be designed and structured such that the performer can achieve those job goals (Rummler & Brache, 1995). Job management is considered a function of 1) performance specifications 2) task support 3) consequences 4) feedback 5) skills and knowledge and 6) individual capacity. These components of job management, if effectively addressed, help job performers achieve process goals, leading to the fulfillment of organization goals.

Most applications of scenario planning clearly emphasize the organization level. The classic and often cited examples of Royal Dutch / Shell and Daimler-Chrylser are clear examples of scenario planning at the organization level. It could also be argued that these are both examples of scenario planning at the individual level since these reports often center on specific reactions to the scenario planning process and the insights it produces.

SCENARIO PLANNING AT THE PROCESS LEVEL

Relatively unmentioned in the scenario planning literature, the process level has been the target of praise and criticism oven the last two decades. From specific consulting strategies like TQM and Six Sigma to the general phase of business process reengineering, the process level has been established as a key area for improving efficiency in organizations. While this level might not immediately come to mind at the mention of scenario planning, there are a few case studies of note that demonstrate the application of scenario planning techniques in process level issues and problems.

A case study by Burt & van der Heijden (in Ringland, 2002) contained as one of its primary aims the reconfiguration of supply chain processes. The case study examined the use of scenarios in the paper industry with a general aim of redefining how the organization perceived its business environment. Three emergent themes included 1) the reconfiguration of the supply chain, 2) the development of electronic media and forms of paperless publication, and 3) the impact of customer empowerment. Ultimately, the participants were "able to connect process insight with existing knowledge to 'stretch' their thinking and understanding. Suddenly, concern about closer working relationships had and underlying rationale. The participants recognized that they had a lack of interface at the point of sale that prevented the development of customer knowledge" (Burt & van der Heijden, in Ringland, 2002, p. 231).

While it is logical that scenario thinking might be used to develop alternative processes and explore more efficient means of delivering products and services, scenarios have rarely been applied in this context. However, some scenario projects such as the IT company International Computers Ltd. (Ringland, 2002) have incorporated systems diagrams to map information markets in process formats, or as in the case of Diamler-Benz Aerospace (Tessum, 1997) systems diagrams were used to map early warning systems as processes of contingency planning.

Another example of scenario diagram use for a process level issue is in the case of Telekurs-Payserv, a Swiss company that carries out Automatic Teller Maching (ATM) PIN verification and recording of transactions for the banking industry in Switzerland. Telekurs-Payserv worked with Janus Global Consulting (2003) to develop a strategic plan based on its payment processing needs. Janus Global Consulting conducted a scenario planning workshop, using the results to map the company's payment process strategy (2003). van der Heijden et al., (2002) suggested that such organizational change is effectively brought about through process change, although "process gain requires persistence and consistency over an extended period" (p. 84).

By considering degrees of uncertainty surrounding its budgeting process, Global Processing Company (GloPro) began the reconstruction of their budgeting process by first exploring possible future surprises after twice missing their budget forecasts (Spetzer & Lall, 2004). A strategy consulting firm led GloPro through the process of scenario planning, focusing on their corporate risk factor. The high degrees of uncertainty surrounding the ability to devise a successful budget plan led to GloPro's information seeking behavior (Spetzer & Lall, 2004). Information seeking can be one of key indicators of appropriateness of implementing scenario planning as a method of reengineering business processes.

World Wide Business Solutions (2003), a firm that has employed scenario planning as a means to draw on past best practices as a way to generate future scenarios, utilizes operational reviews. By developing a practical vision of the future for this a leading food manufacturer and distributor of prepared food with $635 million in revenue, it was determined that business process reengineering (BPR) was the most advantageous route for its client. Subsequent to creating future scenarios, the consultants launched the BPR strategy by implementing Activity Based Costing (ABC). This activity ascertained which areas of the business were unprofitable and which business processes were under-performing based on the future scenarios. As a result of its engagement in the scenario-driven planning process, World Wide Business Solutions was able to provide feedback to the senior management team of its client on the projected benefits.

Scenario work is clearly expanding to domains beyond business and industry. Scenarios have been used as knowledge management and communication tools in government and education domains as well. For example, Barbanente, Khakee, and Puglisi (2002) detailed a case study of scenarios used in metropolitan Tunis to explore the creative potential and possibilities for the city. This case study involved macro scenarios to explore what might be in the external environment and

micro scenarios to explore how individual behavior might change in light of the macro scenarios. Scenario use seems to be constantly evolving, thus the utility in exploring and documenting varying ways of using them is increasing.

Some preliminary conceptual arguments for using scenarios in the process context have also included the use of scenarios as cognitive objects in which scenarios are vehicles for process management and knowledge transfer. For example, in an experiment testing consumer preferences, Stanford MBA students were asked to assess the persuasiveness of an advertisement from a California Winery (Martin, 1982). Given a choice among numerical data from the winery's sales division, a policy statement about the winery's strict quality standards and a story about the founder of the winery and his procedures for delivering a quality product, results showed an overwhelming preference for the story precisely because it contained the same, or very similar data in a form that was easy to remember. While the use of stories in this context varies slightly from the use of scenarios in a planning context, some parallels can be drawn. For example, this research demonstrates that an event made more available from memory will be more easily acted upon. In this sense, events made more available from memory through inclusion in a scenario can reduce the time required for managers or individuals to react to signals in the environment. That is, scenarios appear to be one way of transferring large amounts of information in a format that it is easy to recall.

The process level is a key area for further investigation that might use scenarios to explore alternative processes for improved efficiency and storage spaces for descriptions of knowledge work. Research studies that document the effects of scenarios applied to processes would provide much value by potentially providing an additional application area for scenarios and as Rummler and Brache stated "the process level has been the least understood level of performance" (1995, p. 44) and as such, the process level provides the most potential for improving performance.

Synthesis

A model that synthesizes the core argument of this article describes the approach to scenario planning according degree of uncertainty (see Figure 1). This model also suggests a simplistic hierarchy of scenario planning from the individual level to the organizational / global level. This model is intended as a means for integrating the degree of uncertainty, the level of the organization, and a general description of how scenario planning can be described an characterized at each level.

CONCLUSIONS AND RECOMMENDATIONS

The utility of classifying types of scenario planning according to degrees of uncertainty and organization levels is in the ability to help organization leaders choose the appropriate tools for the situations and problems they are facing. Too often, consultants prescribe a specific tool or

intervention in completely different situations (Micklethwait & Woolrdige, 1995). This kind of activity is often the result of a lack of knowledge on the part of the consultant and is characteristic of management fads. Thus, the intent of a classification system is to provide more information to organization decision-makers in a manner that is clear and concise, and does not require those individuals to conduct their own research or read through every detail that has been published regarding scenario planning.

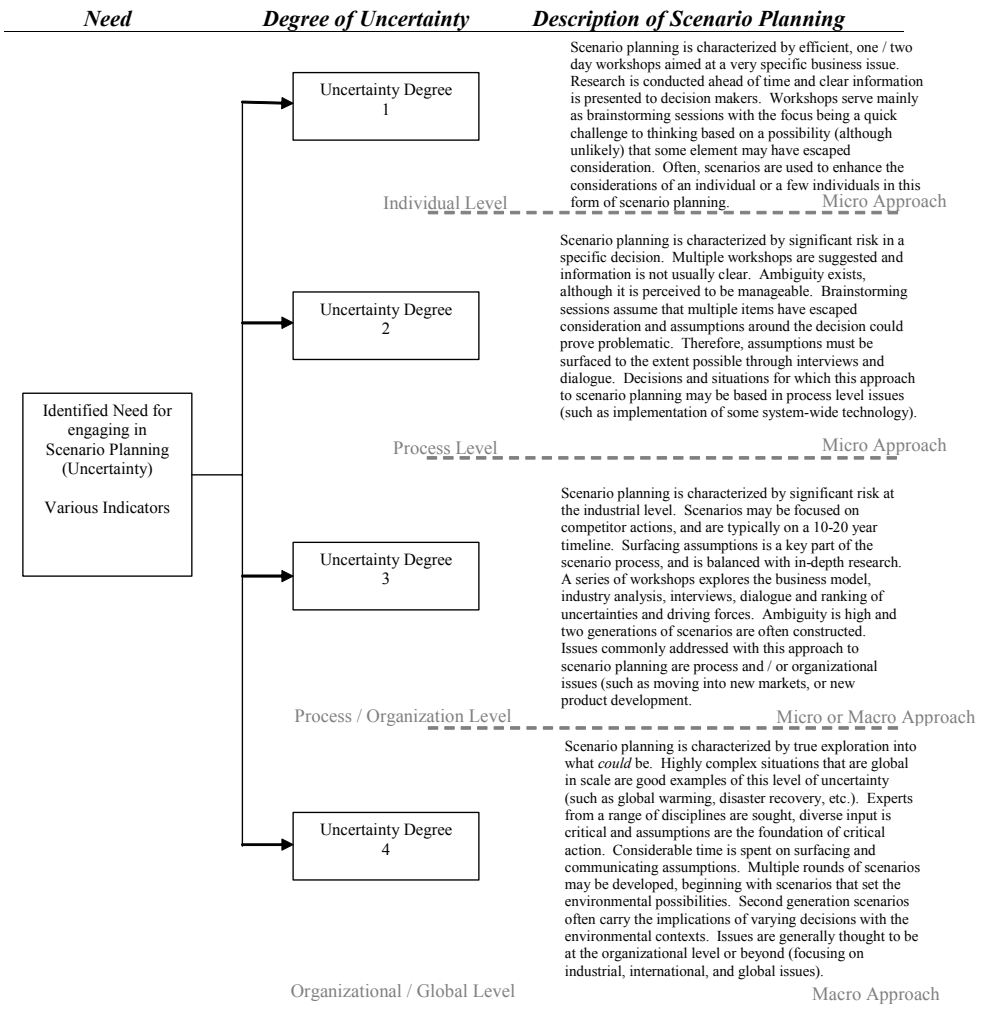
This article offers a means for quickly classifying strategic problems in terms of type of uncertainty and organization level, and then suggests a general approach to scenario planning based on those items. While this article does not prescribe the conditions of organizational readiness to engage in scenario or strategic processes (and this is an area in need of further exploration and documentation), the goal has been to offer a fresh look at varied approaches to scenario planning with an eye on the process level.

From this point, one conclusion is that micro scenarios seem to be an effective means for coping with short-term strategic decisions, although this conclusion is only supported by theory and logic. In order to support this conclusion and move toward establishing the most effective process for using scenarios in this domain, a series of case studies would be an important starting point. It also appears that scenarios may be effective in addressing process level issues. Again, a key limitation is recognized in the logical and theoretical assessment of this connection, rather than one based on empirical investigation and careful study.

The contribution of this article to new knowledge in Management is mainly as a portion of the larger argument that mangers should be embracing scenario planning technologies. Scenario planning has been shown to be an effective organization development intervention (Phelps, Chan & Kapsalis, 2001) and it appears that scenario planning may be effective at the other organization levels discussed by Rummler and Brache (1995). It has been suggested that managers might use gained expertise in scenario planning to leverage itself into strategic conversations of organizations (Provo, Ruona, Lynham, & Miller, 1998). Further, the documented neglect of sound research and thus cumulative knowledge about the function of the scenario planning process provides a clear research agenda with practical benefits.

Management has long claimed to work at the three levels of performance advocated by Rummler and Brache (1995). More tools at the process level (which has been described as the least well understood and that with the greatest potential for benefit) would hopefully increase the options for the management professional, however, a theoretical, and then empirical understanding are first required. This article has provided the basis on which further investigations, empirical or case study, might be conducted to further assess the utility of this application domain.

Figure 1. A Synthesis Model of Scenario Planning Types and Degree of Uncertainty.



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