

**WEICK TO WINE:
MANAGERIAL RELEVANCE OF ORGANIZING FOR
HIGH RELIABILITY IN THE WINE INDUSTRY**

Alfred E Seaman
DeGroot School of Business, McMaster University

John J Williams
Singapore Management University

Barry Wright
Brock University

Carman Cullen
Brock University

Linda Bramble
Brock University

ABSTRACT

Developing a highly reliable organization requires flexibility, and an ability to react effectively to the unexpected, but most business models don't allow for this. A re-analysis of the basic business model and a consideration of highly reliable organizations (HROs) could help provide insight into reducing the impact of the unexpected, increase cost effective behaviors, and increase profitability in the wine industry. This paper addresses the relevance and benefits of HRO thinking in the wine industry.

“Everybody’s got the same LEGO...the ability to understand the business implications, that’s the challenge in the wine industry in which the creative side ends up being too much of a driver.”

As a research team, the authors of this paper have encountered great difficulty in bridging the gap between research endeavors and practice. In particular, wine industry managers that have been interviewed find the lessons from High Reliability difficult to grasp in terms of relevance to their current organizational operations. Consequently, implementing organizational change as a result of suggestions linked to high reliability seems irrelevant and not cost effective or practical at best.

Part of the problem is likely due to the nature of the events studied in the high reliability literature. That is, accidents that are studied are occurrences of events with serious consequences including the loss of life and other catastrophic outcomes such as the Tenerife Air Disaster (Weick, 1990) and the Challenger Space Shuttle disaster (Vaughan, 1996; 1999). The catastrophic outcomes studied do not appear to be applicable to organizations in the wine industry, thus hampering their desire to make necessary organizational reforms that might be suggested as a result of adopting high reliability management and operational processes. In addition, researchers do not often have the opportunity to implement the organizational reforms suggested in the literature, reforms that are often framed in terms of organizational design ideas that managers understand. So the gap continues in the form of inaction, or at least lack of understanding, and ensures that the ideas of high reliability remain unfamiliar and irrelevant to management teams in the wine industry and beyond.

This project is a component of a larger international study into management issues in the wine industry. In order to show the relevance of high reliability thinking to the wine industry, several quotations from interviews with management teams in the industry will be used. The purpose of this approach is to demonstrate that the wine industry could benefit from high reliability management methods. We hope to demonstrate that: wine business organizations, or any other business organizations for that matter, do not have to be on the brink of catastrophic outcomes to be learning organizations; the unexpected is contextual in nature and any organization can benefit from the mindfulness traits of high reliability when dealing with threat exposure; and, wine organizations can learn from the manner in which high reliability organizations must deal with rapidly changing consumer demands, changing competitive environments and regulation. As the wine industry becomes increasingly globalized, competitive, regulated, technologically driven, and generally increasing in complexity, the industry becomes more characterized by the descriptors of high reliability organizations. Wine producing organizations respond by squeezing slack out of operations through mergers and acquisitions, resource constraints, or through the introduction of new technologies (ie., Screwcap, grape harvesting machinery). The result is that these organizations start to exhibit the same tight coupling and interactive complexity that are characteristic of HROs (Perrow, 1984; Weick, 1990).

The purpose of this paper is to provide managerial relevance for the ideas and theory of high reliability (Weick, 1987; Rochlin, 1993; Schulman, 1993; La Porte, 1994) and explain the benefits of operationalizing these ideas in the wine industry. In the next section, traditional management methodology will be compared and contrasted with the high reliability methods. Operationalizing high reliability systems will then be considered

followed by a discussion of how changes in behavior that underpin the organizational culture (Weick, 1987). can shift organizations toward highly reliable operations.

Comparing Traditional and High Reliability Management

*“There’s nothing absolutely different about the wine industry...
nature, product, regulation... you could draw
the parallel with tobacco, spirits.”*

Much of the contemporary literature presented to managers is grounded in the rational model of decision making and organizational structure. Most organizational analyses, it seems, begin and end with decision making but this orthodoxy is steadily losing credibility. For example, strategic goals usually describe how the organization wants to position itself; however, there is a subtle trap. In doing so, this platform of goals does not articulate the important mistakes that people should guard against or how to organize and mobilize to detect them.

There is growing dissatisfaction with this fundamental approach in organizations for several reasons. First, decision making preferences are often inconsistent over time (even short horizons), notoriously unstable, and externally driven. Secondly, linkages between decision making and action are not linear but, rather, are loosely-coupled and interactive. Thirdly, the past is unreliable as a guide to the future. Fourthly, a substantial literature on organizations suggests that political and symbolic considerations play a dominant role in decision making.

The core of developing strategic goals traditionally is a decision making system embedded in the planning function, where budgets and the budgeting process have long-reined supreme. Plans involve thinking about the future, developing courses of action, and evaluating the consequences. However, there are shortcomings. As Henry Mintzberg (1994) has so eloquently described via the fallacy of predetermination, planners plan in stable and known environments. Thus, there is no place in the process for the occurrence of unexpected events.

Plans create mindlessness in organizational behavior in three distinct ways. First, plans originate from assumptions and beliefs about the world. These expectations thus influence what people see. In turn, attention, interpretation, and action are jaded by what people expect to see. Given all the ambiguity around them, planners need some structure and the expectations formulated through planning provide exactly that structure. The picture is completed to confirm expectations.

Thus, plans influence perceptions directly. But plans reduce the number of things that people see. This happens because the planning fits everything into neatly defined categories one way or another. Irrelevant things, by definition, are not part of the plan. And it is precisely these things that fall outside the plan which bear the expected.

Secondly, plans undermine smooth functioning because they specify contingent actions to deal with the future, but the actions are doubly blind. They restrict attention to what we expect. Also, they limit our present view of capabilities to those that currently exist. Thus, we do not think about how to reconfigure our actions to deal with the unexpected. In short, planning precludes improvisation. This description is equally valid in the budgeting process that is supposedly decentralized to remove the obstacles traditionally associated with centralized planning. The fallacy in this logic is made clear

with the analogy of picture-taking with a camera. On a normal lens, the picture captures everything in the foreground but the telephoto shot moves the distant image closer to the viewer, as in the argument for decentralized budgeting. However, the same eye is over the same camera and even more substance is left out of the picture. The mental process and technique involved are virtually identical in taking each separate picture.

Thirdly, plans assume that repeating activities from the past will continue to produce high quality outcomes in the future. However, routines cannot handle novel events or situations. Thus, people need to change what they do but not their sense that something needs to be done.

The Concept of Highly Reliable Organizations (HROs)

HROs are exemplified by the behavioral attributes of people involved in entities such as nuclear aircraft carriers, nuclear power plants, or business sectors experiencing highly volatile external environments, like firms in the semi-conductor business. HROs have come to know that producing reliable outcomes requires the ability to sense the unexpected in a *stable* manner and the ability to deal with the unexpected in a *variable* manner. They have developed infrastructures that are mindful and work just the opposite to most organizations that we see around us.

Given the influence of expectations and routines, most organizations tend to keep their activities constant and vary their processes of mindfulness. Unfortunately, those who invest heavily in plans, standard operating procedures, recipes, and routines tend to become less mindful. These investments tend to restrict sensing to those expectations built into plans. They also restrict responding to actions that are built into this repertoire of consistency. This type of system is less able to sense discrepancies, modify understanding and learn, and invent new ways to deal with the unexpected.

These traditional designs focus on efficiency, success, homogeneity, and certainty. Examples of this are evident in the accounting of variance analysis and TQM efforts. HROs, in contrast, focus on inefficiency, failure, diversity, and surprise. When HROs practice good management, they behave in ways that free their perceptions from expectations. Thus they see more, and sooner.

Managing Ex Post Risk

Managing ex post risk is about emulating HROs. These organizations exist because they manage the unexpected better than anyone else. Understanding this phenomenon requires clarifying expectations versus the unexpected. Expectations involve the potential occurrence of a particular future state. Risk, however, is considered to be the product of the consequence of a future event and its probability of occurring. Hence:

Risk = Consequence x Probability of Occurrence

Risk = Uncertainty + Damage (potential loss)

Risk = Danger + Opportunity

The term "risk" commonly denotes only those future events in which probabilities of alternative possible outcomes are known. Objective probability is a measure of the relative frequency of alternative events and is applicable to those events which are

repetitive in nature. Given a large number of observations, the most probable frequency generated by chance closely approximates the objective probability of an event.

From a behavioral viewpoint, risk is inherently subjective. It does not exist “out there” waiting to be measured. Instead, human beings have invented the concept of risk to help them understand and cope with the uncertainties and dangers of life. While the dangers are real, there is no such thing as “real risk” or “objective risk”. Even the most straightforward risk assessments are based on theoretical models, whose structure is subjective and assumption-laden, and whose inputs are dependent upon judgment.

However, the term “unexpected” means that an event has occurred. Otherwise, it would not be known. It is definitely historical in nature and not hypothetical as are expectations of future outcomes. So, ex ante risk deals with expectations and ex post risk deals with the unexpected. Moreover, ex ante risk deals with managing outputs expressed as undesirable consequences to human life, health, wealth, or the environment. Ex post risk, on the other hand, deals with managing the unexpected. An unexpected event can occur in two different contexts. First, an event can be expected to happen but, in fact, not happen. Reality is different from the prediction. Secondly, an event that is not expected to happen, in fact, happens. The conjunction of these two dimensions is shown in the shaded cell of Figure 1, opposite to the conditions that produce a planned event under conditions of certainty and governed by the tenets of rational decision making.

Figure 1: Unexpected Events

		Event Expected to Happen	
		Yes	No
Event Not Expected To Happen	Yes	Rational Model	
	No		Sensemaking Model

Problems in the Traditional Approach and an Alternative

Events lead to strategy and/or performance. The tragedy in the traditional model is two-fold. First, recognizing the violation of expectations takes too long. Secondly, once the unexpected is observed, containment efforts are misplaced. Thus, two sources of vulnerability emerge in organizations. On the one hand, there tends to be a sudden

loss of sense-making or meaning among members of the organization. They fall into a state of surprise. On the other hand, there is a loss of structure and the organization tends to collapse vis-à-vis its intended mission or strategic purpose.

Why can organizations suddenly be surprised? The answer is because surprises manifest events that have a low probability of occurrence and, when they occur, they seem incomprehensible. To describe this effect more completely, there is a need to translate surprises into concepts of “feelings” and “social construction of reality”. At this point it is useful to elaborate briefly on Karl Weick’s (1993) notion of cosmology episodes.

Cosmology refers to the combination of rational speculation and scientific evidence that people formulate in their minds to understand the universe as one phenomenon. All too frequently, people tend to view space, time, and contingencies as unfolding in a linear, orderly manner. But these everyday cosmologies can be disrupted and, when they are, it is a cosmology episode. The sense of what is occurring and the means to reconstruct that sense collapse simultaneously. There is *vu jade* instead of *déjà vu*.

Thus, to understand sense-making in the organization, we need to shift from a decision making focus to the concept of meaning. Sense-making means that reality is viewed as an ongoing outcome that emerges from efforts to create order and make retrospective sense out of what occurs. Individuals are thus not seen as living in, and acting out their lives in relation to, a wider reality, so much as creating and sustaining images of a wider reality. They realize their reality by reading into their situation patterns of significant meaning.

The world of sense-making is different from the world of decision making. The latter is about strategic rationality and removing ignorance by clear questions and clear answers, much like budgets and plans appear to provide. However, sense-making is about contextual reality which builds on vague questions, muddy answers, and mutual agreements to reduce confusion. When sense-making disappears, structures begin to unravel because the orderliness of the universe is called into question. Moreover, when understanding and procedures for sense-making collapse together, the outcome resembles panic. Early views were that panic causes group structures to disintegrate. But Freud reversed the causality. It is the disintegration of a group or organization that leads individuals to panic. In a group, threats or dangers seem smaller; however, left alone, these become much greater.

Operationalizing High Reliability

Much of the focus in high reliability research has been on socio-technical systems where the consequences have been devastating. This fact begs the question of relevance of the high reliability management techniques in the wine or any other less hazardous business operation. However, if we consider the cost of a business failure in the wine industry it is plain that cost in human terms may be considerable. Employees lose jobs, owners of vineyards lose investment, the banking system incurs substantial loan losses, and in jurisdictions similar to Canada, governments may incur losses of business

development loans. To those organizations or individuals who incur such losses in any form, there is little consolation in the fact that no serious physical injuries occur.

Bringing reliability to the wine industry means recognizing the uniqueness of the industry and the perishable nature of its products. New technological approaches combine with the ancient arts of the *terroir*. In this arena the possibility for human/technical error is present and suffers from the enhanced contact of the social technical interfaces. The secret to high reliability is enacting a culture that fosters organizational learning from the occurrence of errors, near misses, and mistakes (Stead and Smallman, 1999). Heed must be paid to raising awareness to errors or conditions that may develop into full-scale unexpected crises or failure.

Managing the Unexpected Well

How does one manage the unexpected well? The answer is by acting mindfully and, thus, building HROs (Weick and Sutcliffe, 2001). But what does this mean? HROs organize to sense the unexpected unfolding and they manage to arrest its progress. However, if they cannot halt its progress, they focus on containing the unexpected. If the containment gives way, they focus on resilience and rapid fixing of the system functioning.

The question that arises is why mindfulness works? It is because of the counterintuitive response to early stages of trouble that is enshrouded in mindful behavior. There is a strong response to weak signals of trouble and danger. Within this context, organization members at all levels know what they must count on and what is expected of these things, events or occurrences. However, in addition, they also understand and continuously develop awareness of how these relied upon items could fail by developing skills of doubt, inquiry and updating.

Normally, organizations experiencing trouble tend to mismanage the people, operations, and strategy. They manifest a failure to articulate important mistakes that must not occur and a failure to organize to detect them. These two manifestations lead to arrogance, and then to vulnerability. But mindfulness lessens arrogance. HROs focus on inputs whereas traditional risk management focuses on outputs. HROs complicate the input side of the system. They develop complex sets of expectations. Thus, mindful managing is the basis of HROs and this is reflected in five salient features (Weick and Sutcliffe, 2001):

I. Preoccupation with Failure

“...there is paralysis in terms of making mistakes...everybody is afraid of making a mistake as opposed to embracing them... that’s a real weakness in our industry...”

HROs are immersed in detecting and looking for failure, and are constantly worried about error which may be embedded in ongoing operations. It is precisely these worries that give HROs their distinctive qualities because failures are a very rare event. Since failures are so rare and the potential consequences so grave, HROs have little data available for learning. Consequently, they must effectively learn by treating any and all failures as a proxy for system health. Learning therefore means focusing on the liabilities of success and thoroughly analyzing near misses (Weick et al., 1997). They thrive on this

process by looking beyond the local failure condition and determining the potential causal chains which may run deeply into operating systems.

In these organizations, maintenance departments often become centers for learning since they are most familiar with failure conditions in their systems (Bourrier, 1996). HROs work hard to shun the trappings of success, which includes restricted modes of search, reduced attention to operations, complacency, and inertia resulting from limited or no failures. Successful outcomes raise expectations that success will be repeated and, so, HROs treat these outcomes as proxies for failure (Sitkin, 1992). In fact, they encourage the reporting of errors rather than the repression of mistakes. Almost always, they analyze and review near misses. In the process, they downplay success, which increases mindfulness and decreases automatic processing.

Operationally, this means calling attention to failures and understanding the consequences if failure continues. Of extreme importance in this preoccupation is the reporting of errors or failures. In particular, the consequences of reporting errors and how people handle error modes should be benchmarked. A culture that spots potential errors in success, understands the importance of fault detection systems, and maintains the importance of lessons learned is the enabler for high reliability.

HROs are immersed in detecting and looking for failure, oddly as it may seem. They thrive on this process. In fact, they encourage the reporting of errors rather than the repression of mistakes. Almost always, they analyze and review near misses. They downplay success, which increases mindfulness and decreases automatic processing.

2. Avoid Simplification

“I think what our industry badly needs is a credible, unbiased analysis from a credible third party...the goals and needs of our industry are being defined from within...”

HROs try to avoid simplifying interpretations of what went wrong and most certainly disdain homogeneity of the same minds. Nothing is worse for them than a pool of experts that have the same background, same training, and think the same way. Instead, they breed boundary spanning and search for people with diverse experience. Moreover, they loathe routines and accepted ways, and prefer to challenge standard solutions. In the process, HROs are good at developing subtle negotiating tactics.

From an operational point of view, this means an environment in which nothing is taken for granted while challenging and questioning is encouraged. Learning from extensive analyses of problems or contentious issues and expression of views are encouraged. The unexpected invokes complete analyses, incorporates all points of view, and fosters trust and respect in that there is no fear of being shot down or ridiculed. In such an environment, the need for complete understanding of the unexpected and its consequences is more important than the advocacy for points of view, or potentially face saving behaviour.

3. Sensitivity to Operations

“...they were back (the ladybeetle)...in '03...not everybody bought the shaker... the industry is just ignoring it...makes everything taste dusty and chalky...”

HROs spend considerable effort in linking all levels of management. There is no disconnect between headquarters and the frontline. Especially noticeable is the attention given to latent failures, which are frequently assessed. Emphasis is also placed on micro

and continuous adjustments to system functioning. Fear is not tolerated because it enacts failure in the organization.

For operations this means being able to correct faulty foresight. Comprehensively reviewing operations catches otherwise undetected small errors and prevents their accumulation into more serious and potentially costly outcomes. In this environment knowledge beyond ones own job is encouraged, contact and reporting keeps everyone up to date on current operations. Resources in the form of managerial consultation and other resources are available if the unexpected does arise. In this way management is constantly aware of current operations and able to respond with consultation, decision making capacity and resources should the unexpected be developing. Multi-directional communication is of the essence.

4. *Commitment to Resilience*

*“...its going to happen to us as opposed to us getting ahead
and making it happen...”*

HROs develop the capability to reallocate slack resources when they are needed. Thus, errors do not disable the organization. Moreover, they try to keep the errors small so as to maintain system functioning. In this manner, formalization tends to decrease while improvisation increases. In addition, unexpected risks are combated with anticipation and resilience. Anticipation dominates where risks are highly predictable, and specific defenses are deployed against planned risks. But where risks are highly uncertain, resilience dominates, which means that resources are retained to specifically cope with ex post risk. Hence, anticipating the unexpected is best handled by increasing the capability for resilience.

Implementing the ideas of high reliability means not only trying to prevent and anticipate the unexpected, but also being prepared to manage unexpected events when they do occur. Resilience is a capacity to rebound from surprises as they occur. This implies building a capability through extensive, and perhaps excessive technical training, learning from mistakes, developing extensive action repertoires and improvisational skills. The development of knowledge and technical capabilities allows employees to see problems sooner and to deal with problems in new and novel ways, that is, with improvisation. Members of the organization with these capabilities are viewed as centers of learning and knowledge, that is problem solvers.

5. *Deference to Expertise*

“...I get to control people start to finish...”

HROs avoid a command and control mentality even though there is a clear order in the hierarchy. Instead, they try to cultivate diversity and, thus, the idea of a flexible hierarchy increases. When there are problems or difficulties, needed decisions migrate to those with the requisite expertise regardless of rank.

As the operational environment rapidly changes in terms of its competitiveness and complexity, firms in the wine industry will need a capacity for flexibility in analyses and response. At the level of operations, personnel become familiar with and develop respect for the jobs of others as others may very well be the solution to an unfolding unexpected event. Expertise and experience are valued and are relied upon in unexpected situations, their qualification of expertise deferred to instead of the usual hierarchical authority structures. These are key people with key knowledge and expertise who take

control of the problem until its solution. Just as important as having expertise in the organization is the sense that it is accessible when, and as needed.

Relevance Gained

The wine industry faces many new and old challenges (Bramble, *et al.*, 2004): regulation and taxation systems are not only varied in the global economy but are also ever-changing, along with political regimes; grape supplies fluctuate due to climatic variations, or as a result of adversarial relationships between growers and wine makers; existing perceptions of regional products influence consumer behavior as a result of poor or inappropriate production procedures; and, agricultural policies impact the ability of growers or makers to import better vines, or clones and grapes. In addition, technology and other developments provide opportunity as well as potential for the unexpected: refrigeration systems were introduced to control fermentation processes; techniques are being developed to enable emphasizing the production of premium wines; techniques have been changing in order to gain control over processing and thereby reduce spoilage; fermenting agents are being developed and introduced in order to enhance final product characteristics; industry quality standards are being developed to control growing of grapes and production of product; trade agreements introduce new marketing and competition challenges; wine tourism developments have introduced new opportunities for business expansion; and, new research and education initiatives have not only enhanced public awareness but have also allowed potential employees of the industry to become educated in the new and developing realities of the industry.

Unexpected challenges of both an internal and external nature are readily apparent in the above, somewhat abbreviated, set of conditions. What makes high reliability characteristics relevant in this industry, is the state of readiness which could be achieved by their adoption. Such an adoption would allow a growing comfort level with the possibility of the unexpected. In addition, increasing mindful management would increase an organization's ability to manage the unexpected (Weick and Sutcliffe, 2001).

Differences between HROs and Non-HROs

These five salient features of HROs provide a striking contrast to other organizations. HROs stress the amount of value people place on catching unwanted developments early. They also prize how much knowledge people have of the system and the capacity to detect and correct. In particular, there is vital support from top management in allocating resources to sniff out the early detection and management of the unexpected, error-acknowledging accumulation in all personnel, and the total commitment to mindfulness.

In short, managers operating under the traditional pattern attribute failure to external factors and tend to ascribe success to their own efforts. In contrast, HROs specifically look for internal reasons why failure may have occurred to identify what they can control. HROs view success momentarily, and then shun it, because of the negatives underlying complacency, margins of safety, and inattentiveness. Success for them simply means that errors have not lined up yet and they are still incubating out of sight. Thus, the only safeguard against interactively complex disruption for them is continuous vigilance.

Discussion

It is reasonable to expect that some organizations within the wine industry do manifest properties of HROs as dealt with above. However, many organizations, if queried about what event could happen that would reap havoc on the organization, do not have any answer whatsoever. Moreover, assuming that this position is grossly overstated, and a large number of organizations do have an answer, the next question of how to resolve the unexpected would most likely draw blank faces. The bottom line is that there is no empirical evidence upon which to formulate any tentative conclusions about the state of HROs operating in the wine industry.

Certainly there is a large, but often bypassed, literature that argues strongly for a positive relationship between higher performance and the qualities manifested by HROs. We believe that organizations in the wine industry would benefit by assessing the five salient attributes that characterize HRO and benchmarking their features against other organizations in terms of performance. Conceivably, in the wine industry, there are significant differences in performance across different international sectors of the industry that may be attributable to the presence or otherwise of HROs within that sector. Importantly, different levels of the organization, including the Board of Directors, are equally implicated in this thinking. By extension, this begins to implicate matters of corporate governance, and even ethics, into the performance equation of HROs versus non-HROs. The recent settlement by 10 ex-WorldCom directors is testimony to the types of behavior that are preventable in a HRO. Gary Lutin, an investment banker at Lutin & Co. in New York indicated that the accounting improprieties in this case could have been detected by an alert board director familiar with the basics of corporate budgets.

At a practical level, developing high reliability is about uncovering errors or failures in the set of organizational information systems that inform choice and the implementation of choice. Importantly, information systems, per se, no matter how well planned or conceived of in terms of serving the organization's goals, are not immune to deviations of some kind. This assertion is valid across the entire value chain spectrum, which many organizations and those in the wine industry as well, appeal to in the name of good management practice. Mindfulness is essentially looking for things that thwart this purpose rather than things that match the plans and the strategy. In an uncertain environment, machines cannot do this successfully, which is why the pivotal resource is the entire set of people working in the organization.

Therefore, the basic point for management to grasp is that the existing set of behaviors and information gathering mechanisms in the organization is the focal point for both the defensive behaviors that facilitate or inhibit the detection and correction of important errors and the origin of what behaviors must be changed to develop mindfulness. Argyris and Schon (1974, 1978) describe defensive behavior that creates inefficiencies and prevents double-loop learning that is endemic throughout business, government, and other institutional establishments. Referred to as Model I behavior (Argyris, 1993), individuals pursue action strategies that can be called "selling", "persuading", and, under certain circumstances, "saving one's own face and others' face". Events that might be called "perceived threats" or "embarrassing to the individual" are especially prone to these behaviors. And, yet, it is precisely these types of events that allow the incubation of small variations anywhere along the value chain, which can escalate into expected errors or failures that are costly to the organization.

To change behavior under these conditions to one of mindfulness removes the dysfunctional action strategies, which are really counterproductive. Very briefly, Argyris (1993) describes Model II behavior, which does not rely on rationalizing existing plans and intended strategies, but elevates evaluations of events to the visible domain where inquiry is encouraged and confirmation by others is sought. Moreover, Model II behavior is directed at minimizing face-saving, except under extenuating circumstances, so that the important virtue of manifesting trust in other peoples' capabilities can surface. These are the fundamental social virtues that inspire anticipation and resilience in the face of the unexpected.

We believe that the forces of change that Model II advocates gives rise to more self-inquiry, self-reflection, respect for others, honesty, and integrity. These qualities, in turn, champion the cause of mindfulness and its links to all information systems along the organization's value chain. Instead of appealing to the unsavory notion of "whistle-blowing", which complements Model I behavior, Model II behavior condones highly interactive dialogue at all levels of the organization for effective performance.

Conclusions

Examining the anticipatory and resilience mechanisms associated with HROs offers more traditional organizations, inclusive of those in the wine industry, a pathway to effectiveness. A notable feature of HROs is their continuing and unrelenting pursuit of questioning otherwise acceptable norms, information, plans, and strategies that tend to stand as unassailable icons of future success. Unexpected events that occur daily, however, remind us that uncertain environments create surprises that need to be curtailed beforehand, if possible, and which certainly need to be managed effectively when reality unfolds. It seems clear from wine industry sources that the industry, despite having its uniqueness and problems, as all industries do, is essentially facing uncertainties and the potential for the unexpected, as all industries do. We believe that with the adoption of high reliability processes, enhanced organizational learning would deliver noticeable effectiveness gains.

Clearly, to develop the organizational mindset and capabilities that overarch anticipation and resilience efforts in the workplace means that behavioral change is needed. To effect such change is not automatic and without effort. Most behavioral change models argue for three qualities. First, there must be a commitment from the top of the organization to restructure the flows of information and responsibility. Secondly, there must be an understanding that current systems interwoven with the value chain do not have complete knowledge of what can go wrong and that information from outside these formal systems is essential for developing high reliability. Thirdly, a viable alternative must be available and this focus was the essence of the earlier discussion in this paper. We submit that firms in the wine industry are equally vulnerable to limitations of contemporary management systems but they can equally benefit from efforts devoted to building more mindfulness in the organization through these measures.

REFERENCES

- Argyris, C. and Schon, D.A., *Theory in Practice: Increasing Professional Effectiveness*, Jossey-Bass, San Francisco, 1974.
- Argyris, C. and Schon, D. A., *Organizational Learning: A Theory of Action Perspective*, Addison-Wesley, Reading, 1978.
- Argyris, C., *Knowledge for Action: A Guide to Overcoming Barriers to Organizational Change*, Jossey-Bass, San Francisco, 1993.
- Bourrier, Mathieu, "Organizing Maintenance Work at Two Nuclear Power Plants", *Journal of Contingencies and Crisis Management* 4: pp. 104-112, 1996.
- Bramble, Linda, Carman Cullen, Joseph Kushner, and Gary Pickering, "The Development and Economic Impact of the Wine Industry in Ontario, Canada.", Brock University, working paper, 2004.
- La Porte, T.R., "A Strawman Speaks Up: Comments on *The Limits To Safety*.", *Journal of Contingencies and Crisis Management* 2, number 4: pp. 207-211, 1994.
- Mintzberg, Henry, *The Rise and Fall of Strategic Planning.*, New York: Freepress, 1994.
- Perrow, Charles, *Normal Accidents: Living with High-risk Technologies*. Basic Books: New York, 1984.
- Rochlin, Gene I., "Defining High Reliability Organizations in Practice: A Taxonomic Prologue." In K. H. Roberts (ed.) *New Challenges to Understanding Organizations*, pp. 11-32, Macmillan: New York, 1993.
- Schulman, Paul R., "The Analysis of High reliability Organizations: A Comparative Framework.", In K.H. Roberts (Ed.), *New Challenges to Understanding Organizations*, pp. 33-54, New York: Macmillan, 1993.
- Sitkin, Sim B., "Learning through Failure: The strategy of Small Losses.", In B.M. Staw and L.L. Cummings (Eds.), *Research in Organizational Behavior* 14, pp. 231-266, 1992.
- Stead, Eleanor and Clive Smallman, "Understanding Business Failure: Learning and Un-learning Lessons from Industrial Crises.", *Journal of Contingencies and Crisis Management*, 7, number 1, pp. 1-18, 1999.
- Vaughan, D., *The Challenger Launch Decision*, Chicago, University of Chicago Press, 1996.

- Vaughan, D., "The Dark Side of Organizations: Mistake, Misconduct, and Disaster.", *Annual Review of Sociology*, 25, pp271-305, 1999.
- Weick, Karl E., "Organization Culture as a Source of High Reliability.", *California Management Review* 29, pp. 112-127, 1987.
- Weick, Karl E., "The Vulnerable System: An Analysis of the Tenerife Air Disaster.", *Journal of Management* 16, pp. 571-593, 1990.
- Weick, Karl E., "The Collapse of Sensemaking in Organizations: The Man Gulch Disaster.", *Administrative Science Quarterly*, 38, pp. 628-652, 1993.
- Weick, Karl E, and Sutcliffe, Kathleen M.: *Managing the Unexpected*. Jossey-Bass: San Francisco, CA., 2001.
- Weick, Karl E., Sutcliffe, Kathleen M., and Obstfeld, David., "Organizing for High Reliability: The Mindful Suppression of Inertia.", University of Michigan Business School, working paper, 1997.