Build a Healthy Safety Culture Using Organizational Learning and High Reliability Organizing

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Abstract

Wildland firefighters pursue individual learning as a natural activity, an essential part of their professional and personal growth experience. Practical and applied learning is intimately linked to any unit's productivity and ability to effectively and safely manage the unpredictable.

Today's fire organizations face similar needs because they too are in the midst of increasingly diverse demands for transformations requiring renewal. High performance is expected in predictable situations that units can plan for. The ability to manage unexpected events that no one planned for is also required in order to be considered "a highly reliable organization."

The Wildland Fire Lessons Learned Center (LLC) promotes and encourages a learning culture to enhance safe and effective work practices within the wildland fire community. The LLC fosters collaboration among fire professionals by facilitating their networks, providing access to state-of-the-art organizational learning tools, and integrating valuable lessons and effective practices into wildland fire training. The Center provides an avenue and resources for the community to improve skills in continuously creating, acquiring, interpreting, transferring, and retaining knowledge. The LLC's initiatives serve the community's ability to continue learning, mature through gained knowledge, and sustain effective practices (Garvin 2000).

Assuring high performance in an age of complexity is especially important in settings where the potential for error and disaster is overwhelming. Wildland fire has created unique systems to manage planned events much like air traffic control systems, nuclear power generation and petrol-chemical processing plants have in place. Fire people know they also often have to manage very dynamic unexpected events much like how emergency medical response or military combat operations must when they have to deal with unplanned situations suddenly challenging them. Successful units repeatedly use similar techniques that ensure faster learning, more alert sensing and better relationships that create mindfulness. High reliability organizing processes include five effective ways proven to safely implement practical and applied learning in wildland fire management (Weick & Sutcliffe 2001).

Organizational Learning and High Reliability Organizing have significant sets of techniques successfully promoted in wildland firefighting by the LLC. This paper will introduce individuals, teams and organizations to many of these reproducible processes that build and sustain a healthy safety culture.

Introduction

The wildland fire "playing field" in 2007 contains more than just a few obstacles for the wildland firefighting community. Population growth, combined with changing demographics, have led to significant home construction in the United States between

1990 and 2000, and 60 percent are in the wildland-urban interface (WUI). (Stewart and others 2000) The WUI has and will continue to expand making fire management's challenge to restore fire's role in the ecosystem more difficult. Climate change and drought have contributed to increases in lightning, ignitions, the number of extreme events, length of fire season and season severity. Hazardous fuels reduction programs suffer from an increased frequency of prescribed fire escapes and higher costs for mechanical thinning. Workforces are often being reduced due to declining budgets, retirements of the most experienced people, heavier workloads and personal liability concerns. At the same time there are higher expectations from the public and government that wildland firefighters will effectively respond to hurricanes, earthquakes and other all-hazard incidents in addition to wildfires (QFFR 2005). Today, more than ever before, the wildland fire community needs to learn quickly, distill effective practices, distribute them widely and implement them successfully in a continuously learning organization.

The integration of two powerful processes, organizational learning and high reliability organizing, can help any organization increase performance and reliability. People that manage teams in high risk, dynamic environments, are able to reduce unexpected events, contain them and quickly recover from them because they have installed a mindful infrastructure.

Organizational Learning

True "learning organizations" are rare even though the idea is widely accepted. How to create and sustain one seems difficult to do, even though its easy to imagine what one should look like.

The successful ones have a defined learning agenda based upon their identified knowledge gaps. They are open to discordant information so news does not get watered down before it is sent on to superiors. Reports are trusted because relationships and reporting systems are healthy. Opposing viewpoints are sought out and explored for effective learning opportunities. They avoid repeated mistakes because they regularly reflect on their experience, distill useful lessons, share the knowledge, follow through on and support the implementation of refined processes. Learning organizations avoid losing critical knowledge when key people leave because they make time to codify, retain, disperse and build essential knowledge into their values, norms and practices.

Knowledge becomes common property rather than the province of a few. More than only a repository, they act on what they know, taking advantage of new insights and adapting behaviors accordingly (Garvin 2000).

The Learning Process

In order to learn, one must be humble. No one person has a grasp of all that the wildland firefighting community needs to know. Organizational learning demands openness. Everyone needs to be willing to challenge assumptions. We all need to be encouraged to think more deeply than the habitual levels engrained in our process routines and to study the interconnections of our ever more complex systems.

Leaders begin the move from "the way things have always been" by creating supportive learning environments. They recognize and accept differences, provide timely and accurate feedback, pursue new ways of thinking as untapped information sources, and most importantly, accept errors, mistakes and occasional failures as the price of improvement. Pressure alone does not produce creative and innovative thinking. Culture and incentives play important roles.

Tolerating Error

Everyone wants to learn, but nobody wants to be wrong. Members of the organization at all levels need to feel "psychologically safe" to contribute. If they have opportunities for training and practice, feel supported and encouraged to overcome fear and embarrassment associated with making mistakes, are coached and rewarded for efforts in the right directions, and see that your organization rewards innovative thinking as a normal practice, they will contribute.

People need to be encouraged to reveal mistakes so that everyone can learn from them. Near misses are our free lessons. Learning organizations pay attention to them and take time to learn from them. They know these lessons can reveal a potential danger and can be our warning signals of exposure to vulnerability (Weick & Sutcliffe 2001, Garvin 2000).

A safety culture is an informed culture. An informed culture is "One in which those who manage and operate the system have current knowledge about the human, technical, organizational, and environmental factors that determine the safety of the system as a whole." (Reason 1998) The problem is that candid reporting of errors takes trust and trustworthiness. A reporting culture is about protection of people who report and what kinds of reports are trusted. An organization cannot be safe if its reports and reporting relationships are flawed.

"At times, supportive cultures must be coupled with changed incentives if mistakes are to surface. People that see themselves at risk must occasionally be granted anonymity and immunity. The U.S. Federal Aviation Administration (FAA), for example, established the Aviation Safety Reporting System to ensure that pilots voluntarily report incidents or near misses. This was not institutionalized to encourage permissiveness or a lack of accountability. Freedom to fail should not be confused with a license to commit foolish mistakes. Safety nets are no excuse for low standards or mediocrity. But they remain essential." (Garvin 2000)

Teaching vs. Learning

Traditional teaching puts the teacher front and center. This is common when the expert is transferring knowledge to the novice. The transaction is measured by the degree to which important information makes the trip without distortion or loss. Little more than inert ideas are received into the student's mind without being utilized, tested, or thrown into fresh combinations. Just listening to wise statements and sound advice does little. We cannot efficiently use the knowledge of others; it must become our own through use in order for deeper learning to be achieved. Use results in confidence.

Motivating learners by connecting self-interest to organizational goals through nontraditional adult education recognizes that people learn in different ways and for

different reasons. Learning styles of adults involve desires for immediate connection, performance, career advancement and additions to a personal portfolio of experience.

Leaders interested in promoting transformational organizational learning must come to the people at an experiential level first, listening to their experiences, suggestions and key observations. Beginning this way the people use their own language to tell it their way. The process has the opportunity to create a "shared vision" of a learning system where everyone has ownership in an interactive series of learning opportunities.

Pragmatic application methods become learner-centric rather than teacher-focused. Lectures become minimized and facilitation becomes maximized. Collaborative discussion is interjected with organizational strategy, goals and objectives. A process of alignment and connections is facilitated in a nonjudgmental environment. People are stretched to see the big picture and modify it in light of everyone's insights. The key is to have the learners own the process, the material and the knowledge.

Ideas are fed back into the process by asking, "Now that you have discovered these insights, how would you recommend acting or training differently?" That forms the basis for reflection on the past and projection into the future. Action plans can then be developed for training and learning integration.

"Transactional training processes of the past can become transformational learning opportunities. People will see the organization's investment in tangible ways and respond with commitment because the focus has changed from seat hours in training to real impacts on job performance and individual goal setting due to a focus on learning." (Greeno 2006)

Leading Learning

Leaders can create opportunities in learning forums and shared experiences. A cornerstone for organizational learning in the wildland fire community has been the After Action Review (AAR). Creating a climate that encourages objective, open-minded inquiry is critical.

Routine AARs bring firefighters together after events, projects, training exercises, or immediately after any activity to explore the reasons for success or less than optimal results. Learning is the primary purpose in this forum, not who failed. AARs are done regularly, not only when things have gone badly. Processes that need to be sustained are captured as well as areas that need improvement. The discussion always revolves around the same four questions:

1. What did we set out to do?
2. What actually happened?
3. Why did it happen?
4. What are we going to do next time?

Skilled facilitation is essential to effective AARs. Facilitators guide the discussion from beginning to end, ensuring that the participants stay on track. They introduce the topic, keep the group focused, establish and enforce the ground rules,

monitor and maintain the schedule, transition from one question to the next, and summarize the resulting action plans. Most importantly they "set the tone."

AARs require openness and candor, a willingness to set aside traditional lines of authority. There must be honest interchange and recognition that "disagreement is not disrespect." A 360 degree look at all of the influences on the situation does not come naturally to hierarchical organizations. It must be carefully and consciously cultivated. The emphasis needs to be on what, not who. What can we learn? Not who can we blame or find fault with.

A willingness to look upstream into the system that possibly created the opportunity for error needs to be understood at the very beginning of an AAR or any review process. A just culture is "an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information – but in which they are clear about where the line must be drawn between acceptable and unacceptable behavior." (Reason 1997)

James Reason has been studying human error and models of error management for decades. On February 13, 2006 he spoke in Helsinki at an International Human Factors Conference. "The Person Approach to Error Management focuses on the errors of individuals, blaming them for forgetfulness, inattention, or moral weakness. Remedies are directed at the 'sharp end of the spear' error maker and reducing unwanted variability in human behavior that usually include: writing another or adding to existing procedures, disciplinary measures, threat of litigation, retraining, naming, blaming, and shaming, even assuming that bad things happen to bad people. But this isolates errors from their context and has little or no remedial value." (Reason 2006)

"'Sharp enders' are more likely to be the inheritors than the instigators. The System Approach to Error Management concentrates on the conditions under which individuals work and tries to build defenses to avert errors or mitigate their effects. Humans are fallible and errors are to be expected, consequences rather than causes, having their origins in upstream systemic factors. We can not change the human condition, but we can change the conditions under which humans work using system defenses of barriers and safeguards. When an adverse event occurs, the important issue is not who blundered, but how and why the organization's defenses failed." (Reason 2006)

The learning organization focuses on what can be learned from errors, not on where to find fault and place blame.

In any learning forum; meetings, conference calls, or staff meetings, leaders can design well-defined learning goals, ensure that decisions are deferred until ideas mature, and steer participants toward insights as well as action. Balance can be established between performance and learning goals. Performers will work hard to look good, but a learning orientation ensures that they will work smart in order to perform better, accepting difficult challenges that broaden their portfolio of skills, looking for potential learning opportunities, and persisting in the face of obstacles. Over time they will gain both competence and confidence as they continually improve.

High Reliability Organizing

High Reliability Organizations practice a form of organizing that reduces the pain created by unexpected events, helps contain them, and speeds recovery.

We all plan for what we expect to happen and even develop contingencies for ways we think things could go wrong. Managing the unexpected is difficult to "plan" for by definition. We never imagined those surprises! Relying *only on what we can imagine* can eventually mean big surprises, unless we create a mindful infrastructure that is continually:

1. Tracking small failures
2. Resisting oversimplification
3. Sensitive to operations
4. Maintaining capabilities for resilience
5. Taking advantage of shifting locations of expertise

The ability to see things coming long before they arrive, even when events are quickly unfolding outside of expectations or our systems are quietly breaking down just below the surface, can be learned and taught. HRO skills include the ability to recognize weak signals of trouble ahead, to apply novel approaches to problem resolution, to gain emotional maturity evidenced in respectful communication under duress, and having a deep knowledge of how our systems function. They are signs of a commitment to building resilient people, teams and organizations.

The best HROs expect people to make mistakes and systems to fail in unimagined ways. These expectations are evident in the underlying HRO principles that heighten awareness, increase vigilance, and create clarity in the midst of noise, leading to an ability to deal with disasters before they can fully develop. These are traits of mindfulness. Continuous updating in a mindful way minimizes the likelihood of large failure, speeds recovery, and facilitates real organizational learning.

"People who act mindfully notice and pursue that rich, neglected remainder of information that mindless actors leave unnoticed and untouched. Mindful people can hold complex projects together because they understand what is happening. That is what HROs can teach other organizations." (Weick & Sutcliffe 2001)

Preoccupation with Small Failures

HROs treat any lapse as a symptom that something is wrong with the system, something that could have severe consequences if other small errors happen to coincide at one awful moment. The crises you plan for is not often the crises that unfolds. The compounding of small errors can lead to the surprise that creates "an abrupt and brutal audit" where everything left undone comes rushing to the forefront, demanding your attention. Organizing for reliability, leaders teach their people to react strongly to weak signals and anomalies, knowing that the normal tendency is to react weakly. (Weick & Sutcliffe 2001) It doesn't appear to be very heroic, but they won't allow small problems to accumulate to the point where the seriousness is obvious and requires desperate measures.

HROs are wary of the potential liabilities of focusing on success. Success often leads to complacency, the temptation to reduce margins of safety, and the drift into automatic processing. They stalk the anomalies, track down bad news and clarify the onus of proof. What standards people use, who decides what, what trigger points are developed and what indicators are used to help people see the unexpected early are questions that get asked frequently. What people expect and not expect to happen, and the things that they absolutely can not allow to happen are articulated aloud (Weick & Sutcliffe 2001).

Reluctance to Simplify

HROs resist the tendency to simplify by taking very deliberate steps to create a more nuanced and complete picture. They see more. The see it sooner as the dynamic, complex, and unpredictable unfolds because they position themselves to reveal subtleties others miss. People are trained to use their diverse experiences to recall not only what looks familiar but also when the unexpected came from out of nowhere. Diversity is embraced so that team members are not all redundant in their thinking. Different perspectives are healthy. The same thinking is often blind to the same unexpected warnings. The same thinking may feel comfortable especially in teams, believing that consensus has been achieved. Homogeneity can blind a team to the creative thinking so valuable in imagining the unexpected.

HROs develop a healthy skepticism toward received wisdom, even seek out and investigate differences of opinion before negotiations destroy the perspectives that might illuminate unseen facets of a situation. Leaders help others see the value in thinking deeply about the interconnectivity of related systems. They make time to learn how things really work, beyond how they are supposed to function. The new levels of detail help them see when anomalies first appear, and quickly recognize when events begin to change directions outside of expectations.

Our expectations help us simplify our world and steer us away from disconfirming evidence. The basic idea is: we see what we expect to see, we see what we have labels to see, and we see what we have skills to manage. So HROs know that the plans we make can be a trap.

Things that are out of place in a context require closer inspection. HROs also know that there is a human tendency to adopt a different explanation for each small deviation and that proclivity may hide the existence of the one big problem. Usually until, using hindsight after the unexpected event, their relationship with the big error that was hidden in plain view is revealed (Weick & Sutcliffe 2001).

Sensitivity to Operations

Latent failures are loopholes in the system's defense barriers that often have existed for many years only to be revealed when several align to allow an accident sequence to proceed toward a serious, even catastrophic event. Imperfections in training, supervision, defect reporting, engineered safety procedures, briefings, certification, warnings and hazard identification are holes in the safeguards people create. Normal operations often reveal deficiencies, but only HROs consciously look for them in frequent assessments, learn from them and respond strongly to getting them corrected immediately.

HROs are attentive to where the real work gets done. Their big picture is more situational than strategic. People are trained to be flexible, especially in high tempo times, using their well developed situational awareness to make continuous adjustments that prevent errors from accumulating and growing. Small deviations are isolated quickly. Relationships are groomed so people speak up about symptoms of deterioration in the system's health. Withholding out of fear, ignorance, or indifference is eliminated by relationships that are healthy between all people in the organization (Weick & Sutcliffe 2001).

Commitment to Resilience

Resilience is a combination of keeping errors small and of improvising workarounds that keep the system functioning. Both require deep knowledge of the technology, the system, coworkers, one's self, and the raw materials at hand. HROs recruit subject matter experts not only with extensive experience, but also with skills of recombination when parts of the system begin to fail. They mentally simulate worst case scenarios and test their teams in exercises designed to push the boundaries of their abilities (Weick & Sutcliffe 2001).

Evidence of learning is recognized in resilient improvisation of unique solutions or reallocation of resources. People that are able to isolate the problem quickly and continue to stabilize the primary system functions so interruptions are minimal are rewarded.

Deference to Expertise

The flexibility to move the right skill sets to deal with the incident within the larger incident allows everyone to have confidence in the team's ability to reorganize and adjust effectively. A flexible culture is one that adapts to changing demands. Authority structures that are able to shift towards those best equipped to make sense of the situation, take seriously the value of migrating decisions to expertise, especially in periods of high-tempo activity. Information tends to flow more freely when rank defers to expertise and decentralization is perceived as a strength that provides speed, focus, and agility (Weick & Sutcliffe 2001).

HROs collect multiple signals from a variety of sources and assemble them to see where something does not fit into the pattern. Their default position is, "The system is endangered until there is conclusive proof that it is not." Mindful scanning keeps track of symptoms and the diagnoses that people attach to illnesses in the system's functions. More importantly, they make time to examine alternative explanations that skilled people use to make sense of complex situations. They know what special knowledge, skills and abilities their people have. They build upon them and develop their interests to align with gaps that have been identified in the organization's inventory. Beyond position description requirements, HROs track foreign languages spoken, who is good with electricity or machinery, who has lived in different regions that would have local knowledge of the environment, and much more.

Integration of Organizational Learning and High Reliability Organizing

HROs are learning organizations. Organizations can learn the qualities and traits of HROs. Organizations can become learning organizations.

Where to Start

A U.S. Advanced HRO Seminar in February, 2007 brought an interdisciplinary, multi-level group of fire professionals together with Karl Weick and Kathleen Sutcliffe, the authors of *Managing the Unexpected: Assuring High Performance in an Age of Complexity*. Sponsored by the LLC, they have been generous with the fire community, teaching three Managing the Unexpected Workshops each of the three previous years. This seminar was different. It was a graduate level, 2-day adult learning environment opportunity for experienced HRO practitioners. The LLC's plan is to begin teaching others up to a level where they will begin to provide regional HRO awareness workshops. The seminar learning goal included gaining insights into questions like, "What is the best way to begin teaching HRO?" The conclusion was, "Where people are at." Rather than starting with definitions of new vocabulary or asking individuals and teams to, "Just read the book!," experienced practitioners and experts all agreed that a good initial approach is to learn how to recognize what people are already doing and build upon those personal, real-world experiences that demonstrate mindfulness.

Reinforce positive behaviors, attitudes and activities. Raise the comfort level to where people can talk about what they think and believe. Shared beliefs, whatever their content, dominate systems because they gain strength from mutual reinforcement. Learn what their assumptions are and how they feel. Those are the heart and engine of your culture. Culture consists of what people think and expect, energized by strong feelings of approval and disapproval. When people do things that are inappropriate, they feel and sense that those behaviors are not allowed or encouraged and are not normal. Culture is about values that matter and are expressed in emotions like pride, happiness, hypocrisy, shame and despair. These emotions are strong.

A strong culture held together by consistent values and enforced by social pressure gives one all the control a leader needs. Consensus plus intensity focused on a handful of valued principles is a powerful and sufficient guide. People that become tightly coupled with core values like integrity, fairness, and social responsibility can be given autonomy because they want to and will do *the right thing* (Weick & Sutcliffe 2001).

Many organizational development consultants recommend focussing on a part of the organization and motivating it to excel. But their inter-relationship is best revealed when a learning system to serve them all develops. An equation relating individual, team and organization requires motivational interdependence. This kind of learning system recognizes the unique role of all three components. (Greeno 2006)

Working with individuals to understand their priorities can impact their quality of life. By "keeping the main thing the main thing," Stephen Covey advocates a method of living that involves individual planning, understanding personal integrity, and developing personal mission. Motivation is a transformational event for the person. (Covey 1994)

Through encouraging managers and leaders to respect their human capital, Ken Blanchard instructs on situational leadership and employee empowerment. His perspective is that the organization is responsible for setting up processes that

develop living teams. Participation by people in a dynamic team often leads to a motivated return. (Blanchard 1998)

Peter Senge focuses on organizational systems and system-wide thinking. He writes that true motivation is in the creative system and enterprise-wide implementation. His definition of a learning organization is one that is "continually expanding its capacity to create its future." (Senge 1990)

By communicating from the outset the interdependence of individual, team and organization the resulting processes will be owned by all and real learning occurs. Each becomes a powerful actor and resource in the equation. Each person stays engaged in their personal learning evolution and everyone benefits, including their team, organization, external stakeholders and the customers your organization serves.

Preconditions

Real transformational learning requires some preconditions: psychological safety (tolerance for mistakes of commission), learning orientation (intolerance for mistakes of omission), and efficacy (a belief that together we can handle what comes up). HROs thrive in the same learning culture.

Mindfulness must be treated as a culture as well as a set of processes. If an organization wants to sustain mindful management of the unexpected, it needs to embed those processes as underlying principles in an integrated set of values, expectations, and norms that encourage appropriate attitudes and behaviors and discourage inappropriate ones.

A mindful culture resembles an informed safety culture. "If timely, candid information generated by knowledgeable people is available and disseminated, an informed culture becomes a learning culture." (Weick & Sutcliffe 2001) The combination of candid reporting, justice, and flexibility allows the true condition of a system's health to surface. When inquiry is encouraged, people are able to see multiple perspectives and even debate ideas that can promote insights into new sources of hazards and ways to cope.

The greater the learning opportunities available, the greater the corresponding innovation capacity and resilience of the organization. We can learn how to see more clearly and really make sense of complicated situations. Sense-making is different than decision-making. Paul Gleason, a famous American wildland firefighter is often quoted by Karl Weick for saying:

> "If I make a decision it is a possession; I take pride in it; I tend to defend it and not to listen to those who question it. If I make sense, then this is more dynamic and I listen and I can change it. A decision is something you polish. Sensemaking is a direction for the next period."

People respond to things that make sense to them. Dr. Weick recommends that leaders, when they believe they have made sense of a situation, communicate in a systematic way. Practice using the acronym STICC makes it easy to remember.

Situation: Here's what I think we face

Task: Here's what I think we should do

Intent: Here's why

Concern: Here's what we need to watch

Calibrate: Now talk to me

Your Leadership Style

Upon completion of one of the HRO or Organizational Learning Workshops sponsored by the Lessons Learned Center, we often hear participants say, "I wish my peers, superiors and subordinates all could have been here. I may be the only one that has any clue what mindfulness is, or that we have a ways to go before we can say we truly are a learning organization. This is going to take a long time!"

Paul Gleason, the famous American wildland firefighter mentioned earlier, is also famous for saying, "Become a student of fire." Now in addition to fire, become a student of organizational learning and high reliability organizing. Immerse yourself in examples and descriptions of mindfulness that bring alive what it is and what it accomplishes. Learn to see more and less mindful moments. How you lead is the most immediate, most influential, and most controllable means you have to start managing the unexpected. People will see in your actions that mindfulness is practical, doable, and makes a difference. People will want to adopt the tools you use to stay on top of the unexpected.

Enhancing Awareness and Anticipation

Leaders that sense problems earlier seem to maintain high self-consciousness about beliefs and their validity, institutional support for ongoing doubt, updating, and learning, attention to here and now activity, and active examination of interpretations. Dr.'s Weick and Sutcliffe recommend several practical ways to develop these HRO skills. The following are a few that firefighters have found valuable to implement:

- Preserve a balance of values. Leaders communicate through their actions (where they focus their attention, how they react to unexpected events, to whom they give rewards, and decisions about who to recruit or move out of their unit) sending important messages about the kinds of behaviors that are desired.
- Restate goals in the form of mistakes that must not occur. This puts focus on the unexpected, disconfirmed expectations, and on issues of reliability.
- Try to increase the number of mindful moments and short interval learning opportunities, such as when your team is trying to solve a modest problem and agrees to look at the work involved, brainstorm a resilient response, and pinpoint the expertise in handling the problem rather than the person accountable for the problem.
- Create awareness of vulnerability. Ask questions like, "What is risky here?" Awareness of vulnerability increases learning opportunities and is central to reliability. Complacence is inappropriate.
- Cultivate humility. Try to see the value of increasing organizational learning through a healthy scepticism about your successes and a greater awareness of the potential for failure. Success can breed overconfidence in the status quo and makes people less tolerant of opposing viewpoints.

- Create an error-friendly learning culture. Team learning behaviors include seeking feedback, sharing information, asking for help, talking about errors, and experimenting with ideas. Create an atmosphere of openness where people feel safe to surface unexpected events rather than covering them up, ask for help when they need it and seek feedback so learning is the recognized important thing. Make it easy.
- Put a premium on interpersonal skills. Strengthen conflict resolution, negotiation and facilitation skills. Foster norms of mutual respect for different perspectives and alternative frames of reference. Develop agreements on how to disagree agreeably, develop ground rules for working things out and reconciling contradictions.
- Examine assumptions thoughtfully. You may see something you missed every time before, something that next time will give you an advantage, details that foreshadow new consequences, unsuspected leverage points, unforeseen vulnerabilities and sequences that can be rearranged.

Enhancing Containment

Build competence to contain problems and recover quickly once they become evident. Containment is something that can be anticipated, rehearsed, and prepared for by increasing knowledge and capability.

Before events occur, knowing they someday inevitably will, enlarge response repertoires with deep knowledge through cross-training between positions, regular learning from both near-misses and mistakes as well as successes. These all enlarge the range of issues that people can notice and deal with. Regularly inventory what resources you have, especially in your people. Go deeper than the obvious job requirements into their life experiences and educations to illuminate their potential. Interaction with the conscious goal of building relationships can be part of running "what if" scenarios. Harness knowledgeable people into networks that self-organize to provide expert problem-solving. Exercise them in low-tempo times under simulated stressors to see how they respond and work together. Continuously reinforce three values: credibility, trust, and attentiveness.

Systems will fail in unimagined ways. You'll know it when the audit comes. This problem is a surprise. You have seen similar messes maybe, but this is new. While you begin to contain the event by doing what your experience tells you to do, watch for what you have not seen before remaining in doubt that you are doing exactly the right thing. Information intake will increase as well as the appropriateness of actions.

- Communicate. Listen respectfully and attentively to what others say. Make sure everyone's voice is heard. Think out loud so mindfulness is apparent when you question categories, propose refinements, spot limitations, and see new features of context. This helps others understand what is going on and provides them a mindful model to imitate.
- Create flexible decision structures that let sense-making migrate to people who have the most expertise to deal with the problem.

- Accelerate feedback during and after the incident. Initial effects of attempted improvisations can be detected quickly and modified or abandoned. Speed, agility and focus. Routine After Action Reviews should have become expected as normal functioning, but especially after an unexpected event. Continuous improvement and organizational memory are critical.

Conclusion

Is your organization ready for a brutal audit of its ability to act mindfully in a high risk, low frequency, even unimaginable event where discretionary time is limited? Does your organization know the costs of mindless action in a complex, unpredictable world? These are tough ways to learn. In addition to fire, become a student of organizational learning and high reliability organizing. Become the leader your fire organization needs on today's playing field.

References

Blanchard, K., and S. Bowles 1998, *Gung Ho!* New York: William Morrow and Company

Covey, Stephen R., A. Roger Merrill, Rebecca R. Merrill 1994, *First Things First*, New York: Simon & Shuster

Garvin, David A., 2000, *Learning in Action: A Guide to Putting the Learning Organization to Work*, Harvard Business School Press

Greeno, Nathan J., January 2006, *Corporate Learning Strategies*, American Society for Training & Development, ASTD Press

QFFR 2005 by the Brookings Institute, *Quadrenial Fire and Fuel Review*, http://www.wildfirelessons.net/documents/QFFR_Final_Report_071905.pdf

Reason, James T., February 13, 2006, Presentation in Helsinki at an International Human Factors Conference.

Reason, James T. 1998, *Achieving a Safe Culture: Theory and Practice*, Work and Stress 12:293-306, See p. 294

Reason, James T. 1997, *Managing the Risk of Organizational Accidents*, (Aldershot, Hants, England; Brookfield Vt. U.S.A.: Ashgate), See p. 195

Senge, Peter M. 1990, *The Fifth Discipline: The Art and Practice of the Learning Organization*, New York: Doubleday Publishing

Weick, Karl E. &, Kathleen M. Sutcliffe, 2001, *Managing the Unexpected: Assuring High Performance in an Age of Complexity*, published by Jossey-Bass, a John Wiley & Sons, Inc. Company