

Some organizations
can't afford to make
any mistakes. What
can we learn from
them about dealing
with the unexpected?

Sense and Reliability

A Conversation with Celebrated
Psychologist Karl E. Weick

by Diane L.outu

MOST OF US SPEND OUR LIVES operating in some kind of organization – whether it's a family, a church or synagogue, a school, or a company. And, as we do with many of our close relationships, we take a lot for granted about these groups. Indeed, our familiarity with them often breeds a kind of contempt: We blame organizations for subjecting us to deadening routines and demanding from us dehumanizing conformity. We implicitly subscribe to a theory of the organization as a highly monolithic, predictable entity – one in which members can be easily programmed to plod along monotonously, facing the same kinds of problems day after day and year after year.



But that view is deeply flawed; most organizations face all kinds of unpredictable challenges – large and small – that collectively place huge demands on people’s creativity and imaginations. Indeed, in an ever-changing, rough-and-tumble business environment, the assumption that the corporation is something stable and secure becomes dangerous. When the unpredictable does happen, and the world as we know it unravels, we are all the more likely to become so paralyzed that we cannot survive the experience.

What can we do to better recognize and manage the unpredictable? Few people are more qualified to answer that question than Karl E. Weick, the Rensis Likert Distinguished University Professor of Organizational Behavior and Psychology at the University of Michigan Business School at Ann Arbor, and professor of psychology at the university. Over the course of his career, Weick has become world renowned for his insights into why people in

organizations act the way they do. His book *The Social Psychology of Organizing* (McGraw-Hill), first published in 1969, turned organizational psychology on its head by praising the advantages of chaos, demonstrating the pitfalls of planning, and celebrating the rewards of “sense-making.” These insights were expanded in a later book, *Sensemaking in Organizations* (Sage, 1995). Most recently, Weick – along with University of Michigan colleague Kathleen M. Sutcliffe – has turned his attention to *Managing the Unexpected* (Jossey-Bass, 2001).

Weick has journeyed widely in his search for organizational meaning – from jazz orchestras to firefighters, from the Skylab crew to Native American hunting parties – and his findings stand in sharp contrast to most of the literature on business organizations. Weick’s view of corporations is as complex as the people who populate them. His organizations chat, dissemble, disguise, mobilize, and “galumph.” In other words, they are alive. Not

surprisingly, while most management writers advise businesspeople to simplify and streamline, Weick challenges executives to complicate themselves. For him, reality is not some black-and-white matter “out there,” but rather a fluid entity that organizations half imagine and half create. In the following edited conversation, Weick offers fresh perspectives on managing surprise, focusing on failure, and surviving what he calls “cosmology” attacks.

Your most recent research focuses on high-reliability organizations. What are HROs, and why are they important?

An HRO is, for instance, a nuclear power plant, an aircraft carrier, an air-traffic-control team, a fire fighting unit, or a hospital’s emergency department. You could even think of restaurant kitchens, with orders coming in rapid-fire and knives flying all over the place, as high-reliability organizations. HROs operate under very trying conditions all the time and still manage to have fewer than their fair share of accidents. An aircraft carrier, for example, could have a disaster every time a plane lands or takes off. But it doesn’t, and the question is, Why not?

The key difference between HROs and other organizations is the sensitivity or *mindfulness* with which people in most HROs react to even very weak signs that some kind of change or danger is approaching. In contrast to HROs, most companies today are hugely unprepared for the unpredictable. Managers are under the illusion that they know more or less what’s going to happen next or how other people are likely to act. That’s both arrogant and dangerous. Not only do those managers ignore the possibility that something unexpected will happen but they also forget that the decisions they do make can have unintended consequences. Consider the launch of New Coke in 1985. Immediately after the product was introduced, the company got as many as 8,000 letters a day from angry consumers. Clearly, Coca-Cola had failed to accurately predict people’s behavior. To its credit, however, the company came back with Coke Classic within just three months. But as the story shows, you have to take action at the earliest sign of danger, or you may get killed. Everyday problems escalate to disaster status very quickly when people don’t respond appropriately to signs of trouble. HROs distinguish themselves by being able to detect incredibly weak warning signs and then taking strong, decisive action.

How might an HRO respond to a weak signal?

Consider board operators in the control room of a nuclear power plant. They pay close attention to small, unexpected events that may foreshadow larger system problems—for instance, they note when an automatic system doesn’t respond as expected or when unusual data re-

garding plant parameters crops up. They recognize when a procedure is inappropriate and navigate to a different one. This watchful updating facilitates management of the unexpected, and I believe it results in large part from a preoccupation with failure. Think about it: Concerns about failure are what give nuclear power plants their distinctive quality. But since complete failures in nuclear power plants are extremely rare, the people working there are preoccupied with something they seldom see. And this requires a special kind of alertness. Workers in these facilities do not monotonously watch dials, read printouts, or manipulate graphic displays and then breathe wearily at the end of the day: “Terrific—I’ve just had another dull, normal day.” On the contrary, these workers make judgments and adjustments and comparisons to *keep* their days dull and normal. Of course, there is undoubtedly a kind of obsessiveness in all this, which is true of all HROs and which can make them unpleasant places to work in. But the minute a nuclear-plant worker says, “Hey, this job is boring,” there is the danger that he’ll stop making the fine-tuned adjustments needed to keep the job unexciting. And we all know how catastrophic it can be when things get exciting in a nuclear power plant.

For a classic example of a company misreading or ignoring a weak signal, you might consider the staffers at Ford’s recall office during the Pinto crisis in the 1970s. They were aware that the Pinto could sometimes catch fire in low-speed, rear-end collisions. But they saw no need to recall the car, because they couldn’t find a “traceable cause” for the incidents. They missed the fact that bolts on the cars’ rear axles had punctured the gas tanks of the Pintos involved in those crashes. Their inability to pick up on weak signals spelled disaster.

Can organizations learn to be more mindful?

They can, by adopting some of the practices that high-reliability organizations use. For instance, besides being fixated on failure, HROs are also fiercely committed to resilience and sensitive to operations. Managers at these organizations keep their attention focused on the front line, where the work really gets done. For example, among wildland firefighters, the most successful incident commanders are those who listen best to the people out there actually fighting the fires. HROs also defer to expertise, and they refuse to simplify reality. This last point is particularly important because it has profound implications for executives. As I have often written, leaders must complicate themselves in order to keep their organizations in touch with the realities of the business world. My worry when executives say, “Keep it simple, stupid,” is that they’re underestimating the complexity of their own organizations and environments. But contrary to how we often think about them, organizations are not at all passive; they are extremely active, and they half create their

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environments. So part of the solution to managing the unanticipated is to get executives to step back and acknowledge just how messy reality can sometimes be.

**That reminds me of your famous battle cry:
"Believing is seeing."**

Simple as it sounds, I really do think that's the case more often than not. By inverting the cliché, I'm trying to communicate that we can only see what we are prepared to see. There are many illustrations of this fact, but the one that really drove it home for me was the story of how child abuse first came to be recognized in this country. Child abuse was "discovered" and the treatment of it accelerated only in the 1960s when, in Boulder, Colorado, pediatricians and radiologists who were treating children added social workers to their teams. Until then, the pediatricians and radiologists wouldn't even allow the possibility that parents could be hurting their own kids because they didn't know what to do next. But when the social workers came on board, they said, "Sure, child abuse happens, and we know how to handle it by providing protective services." It was only at this point that the physician teams could afford to see child abuse, because then they knew how to deal with it. The moral, of course, is that the greater the repertoire of responses you have on your team, the more things you can do. And ultimately, the more ready you are to deal with reality, the more you

tion. But no matter how many people may be involved in them, failures are easier to recover from if they are spotted early on, when they are small. If you can catch a failure right away, it's less difficult to say, "Look, there's been some kind of mistake here, but it might just be a sign that the system has gone a little haywire."

Organizations can do a lot to encourage their members to face up to failure, even to become preoccupied with it. There is an interesting story that one of my colleagues tells about the great German scientist Wernher von Braun. When a Redstone missile went out of control during prelaunch testing, von Braun sent a bottle of champagne to an engineer who confessed that he might have inadvertently short-circuited the missile. An investigation revealed that the engineer was right, which meant that expensive redesigns could be avoided. You don't get a lot of admissions like that in organizations today. But all it takes is one such story to make an individual in the company buck up and say, "Hey, these folks are serious about facing up to failures, so I'm going to take a chance and speak up."

I've also repeatedly found that employees at HROs cultivate a fascination with failure by refusing to take shortcuts or simplify reality. Let's say the workers at a nuclear power plant have to shut down the plant's air supply system in response to some emergency signal. They won't treat the plant blueprints as a reliable guide for the system—which a businessperson might do in the interest of

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can acknowledge its complexity. That's one of the reasons, I think, that we are seeing more concern about greed and CEO conduct in the United States right now—because we now feel we have a better idea what to do about it through governance.

You say HROs are obsessed with failure. But don't most organizations marginalize leaders who fail?

There is a strong tendency in companies that aren't high-reliability organizations to isolate failure, to blame the culprit, and to not learn from mistakes. And that's idiotic, because few failures can be traced to a single individual. Consider excess surgical deaths in hospitals. Typically they are the consequences of understaffing, poor handoffs of information about the patient as he is moved from the surgical suite to the recovery room and then to the ward, and the low frequency of performing a particular opera-

getting the job done quickly. Instead, they will check the whole system for valves, piping, or reroutes that may have been added since the drawings were completed. They know that it's what's missing from the blueprints that could cause the really serious surprises. In other industries as well, successful companies often turn out to be those that refuse to simplify reality—that go behind the blueprints. I'm thinking of companies like retail giant Wal-Mart, with its legendary attention to detail; the California-based design group Ideo; and Francis Ford Coppola's American Zoetrope Productions.

Is there one kind of leader who's particularly good at managing the unexpected?

Not surprisingly, newcomers to an organization catch a lot of stuff that old-timers miss, which is one reason there is such a huge temptation to bring outsiders into an

organization during crises. But newcomers, for good reason, also tend to shut up about what they see, lest they come across as really dumb. That's why I place a lot of trust in executives who are generalists. People who study liberal arts tend to get exposed to a wider variety and greater richness of values than people normally get in professional schools. At the same time, though, when I speak of generalists, I mean more than those people who have studied literature or art in college. I'm talking mainly about executives who have heterogeneous work and industry experiences. Because of their diverse work histories, these executives are in a good position to cope with problems in original ways. I'm thinking here of Lou Gerstner, who landed at IBM with the experiences he had gained at RJR Nabisco, a consumer products company; American Express, a financial services company; and McKinsey, a consultancy. Also consider the late Mike Walsh, who moved from Cummins Engine to Union Pacific Railroad and Tenneco, and Larry Bossidy, who joined Allied Signal from General Electric. Generalists such as these can often construct a richer, more useful version of what's going on than specialists can. At the very least, their broad experiences can help these executives not to get paralyzed by what I call a "cosmology episode."

That's an intriguing term. Can you explain it?

Think back to 1993. That's when the Centers for Disease Control first came up against hantavirus in the Southwest. The virus made no sense: It had never appeared in landlocked regions before, and it was killing people by attacking their lungs rather than their kidneys, the virus's usual target. It seemed to defy explanation. And that's as close a parallel to a cosmology event as I can describe. Basically, a cosmology episode happens when people suddenly feel that the universe is no longer a rational, orderly system. What makes such an episode so shattering is that people suffer from the event and, at the same time, lose the means to recover from it. In this sense, a cosmology episode is the opposite of a *déjà vu* experience. In moments of *déjà vu*, everything suddenly feels familiar, recognizable. By contrast, in a cosmology episode, everything seems strange. A person feels like he has never been here before, has no idea of where he is, and has no idea who can help him. An inevitable state of panic ensues, and the individual becomes more and more anxious until he finds it almost impossible to make sense of what is happening to him.

The continual merging and divesting and recombining and changing of responsibilities and bosses over the years has created intense cosmological episodes for many businesspeople. Even senior executives are unsure of whom they're working for and why. If you compound that with more globalization and high-velocity change in the environment, it's not surprising that nobody seems to have a firm sense of who they really are any more. Many people

even have trouble locating themselves on organizational charts. So I think it's fair to say that in the course of their careers, most managers will have at least one cosmology episode; their worlds will get turned upside down. Having the kind of alertness to weak signals that we see at HROs can help managers avoid this particular psychological crisis. In the case of the hantavirus, for example, the puzzle was eventually solved when epidemiologists discovered that recent climatic changes had produced an explosion in the rodent population that carried the virus, which increased the likelihood that humans might be exposed to hantavirus. In cosmological episodes, paying very close attention to details can definitely restore a sense of mastery.

So people can convert a cosmology episode into something positive?

What I've repeatedly noticed is that the people who really get in trouble during these crises are those who try to think everything through before taking any action. The problem with defining and refining your hypotheses without testing them is that the world keeps changing, and your analyses get further and further behind. So you've got to constantly update your thinking while you're sitting there and reflecting. And that's why I'm such a proponent of what I call "sensemaking." There are many definitions of sensemaking; for me it is the transformation of raw experience into intelligible world views. It's a bit like what mapmakers do when they try to make sense of an unfamiliar place by capturing it on paper. But the crucial point in cartography is that there is no one best map of a particular terrain. Similarly, sensemaking lends itself to multiple, conflicting interpretations, all of which are plausible. If an organization finds itself unsure of where it's going, or even where it's been, then it ought to be wide open to a lot of different interpretations, all of which can lead to possible action. The action and its consequence then begin to edit the list of interpretations down to a more manageable size.

And this is the point I wish to underscore: Action, tempered by reflection, is the critical component in recovering from cosmology episodes. Once you start to act, you can flesh out your interpretations and rework them. But it's the action itself that gets you moving again. That's why I advise leaders to leap in order to look, or to leap while looking. There's a beautiful example of this: Several years ago, a platoon of Hungarian soldiers got lost in the Alps. One of the soldiers found a map in his pocket, and the troops used it to get out safely. Subsequently, however, the soldiers discovered that the map they had used was, in fact, a drawing of another mountain range, the Pyrenees. I just love that story, because it illustrates that when you're confused, almost any old strategic plan can help you discover what's going on and what should be done next. In crises especially, leaders have to act in order to think—and not the other way around.

One of the cruelest things about organizations today is that they hold executives to standards of rationality, clarity, and foresight that are unobtainable. Most leaders can't meet such standards because they're only human, facing a huge amount of unpredictability and all the fallible analyses that we have in this world. Unfortunately, the result is that many executives feel they just can't measure up. That triggers a vicious psychological circle: Managers have rotten experiences because they keep coming up short, which reinforces low self-esteem. In the end, they

and storytelling. Gossiping is just a way to rehearse different stories before they become formalized and spread out across the organization. It can help employees process information that might not otherwise make it into the "official" story. At the same time, because it is mostly made up of exaggerations and bluster, gossip can help prepare an organization for the unexpected and, in this way, can serve as a prelude to sensemaking and action. Indeed, I'm always surprised by how little factual information leaders really need to get going.

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get completely demoralized and don't contribute what they actually could – and otherwise would.

But if you tried telling today's leaders to accept the fact that they're not quite as rational, deliberate, and intentional as they claim to be – and that that's okay, because that's the way humans are – I think most executives wouldn't understand. They've internalized the pressure to be perfect. Caught in a nasty cycle of insecurity that is covered up by hubris, many executives place a lot of hope in unrealistic goals. Meanwhile, it is the people further down in the organization who are actually doing all the improvising and patching and scrambling to make plans work. And the people at the top don't have any idea how much the people in the middle are breaking their backs to keep the organization going.

What does sensemaking have to do with our instinct to create stories to explain the unexpected?

As the writer Joan Didion once put it, "We tell ourselves stories in order to live." In business, we tell ourselves stories in order to know more and compete better. In a crisis, stories help us not to panic. As reality unfolds, everyone starts asking themselves, "Do you have any idea what's going on here?" Then someone spins a story, and the moral is something like, "Don't worry, I have seen something vaguely like this before." And that's more than comforting, it's motivating. People don't need much to get moving – just a little kernel of meaning. Even if the company is in a quite serious situation, someone will be able to use that tiny core of meaning to convert their interpretations into action.

In any organization, the most powerful stories are created and spread through informal gossip. Indeed, I don't think there's a fundamental difference between gossiping

and storytelling. Let me give you an example. One organization that has struggled with reliability is Union Pacific. Back in the 1990s, the company suffered repeatedly from managerial paralysis – even the employees began to call it the Utterly Pathetic railroad. At that time, the following story started circulating among employees and customers: A locomotive engineer got so fed up with the railroad's incompetence that he decided to commit suicide. So he went outside, lay down on the railroad tracks – and starved to death. That kind of urban myth was a perfect way to express just how frustrated people had become with the railroad not doing anything during a period of intense upheaval.

You've often said that plans are overrated, that they can actually make things worse for organizations.

Yes, I usually urge executives to fight their tendency to want to plan everything. Most plans are too specific, and the details create the illusion that the plan grasps everything that is going on and therefore can be trusted. As a result, when you have a plan, you tend not to look for things that disconfirm it. Plans are the opposite of gossip in that they lure us into the trap of overlooking the unexpected. They also deceive us into thinking that we know more than we do. The worst aspect of plans is that they heighten the tendency to postpone action when something unexpected happens. People do nothing while they stand around asking themselves, "What was I supposed to do in this kind of emergency?"

I learned this lesson while watching some training at a nuclear power plant. This particular firm had a mock-up of a control room where they trained people, and they were very proud of the fact that it was such an accurate copy of the real thing. And it was great – a real knockout.


But the unanticipated consequence of the verisimilitude is that when people got out of the training facility and went into the actual control room, they were hesitant to deal with emergencies. In one instance when something went wrong, employees waited for a long time before taking action. They just sat there, searching their memories for where they had seen this situation before in the training session. And it was the very fidelity of the mock-up to the real control rooms that caused their delayed reactions. Meanwhile, the reactor was getting hotter and hotter and hotter. The company would have been better off if its employees had only had a few guidelines, just enough to keep them moving in times of crisis.

All this is not to say that plans are unimportant in organizations. They are important, but not for the reasons that people think. Plans are signals, games, excuses for interactions; they are not good for micromanaging the unexpected.

You've said companies need to encourage their employees to "galumph." What is that, and why is it important?

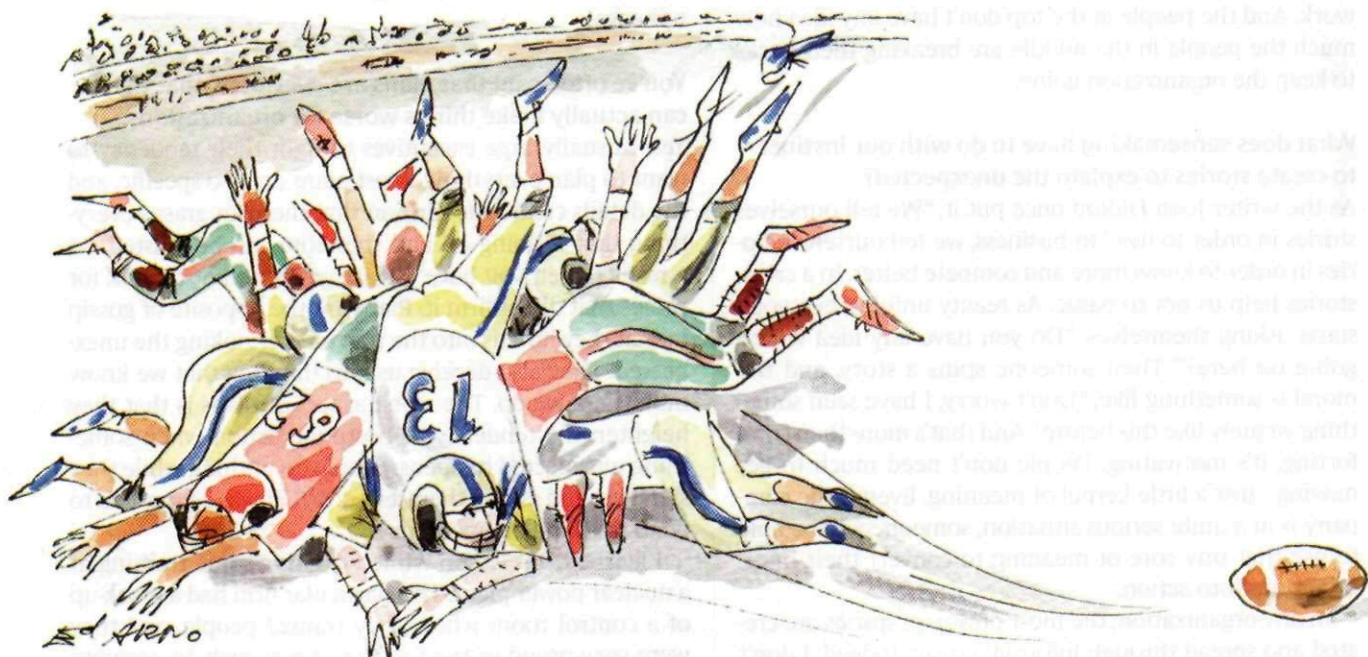
It doesn't match the dictionary's definition, but I use the term to mean a kind of purposeful playfulness. It is not frivolous or aimless play but a kind of improvisation whereby organizations try out different possibilities. In this sense, galumphing keeps people from becoming too complacent; it helps executives see things in a new way. Consider wildland firefighters: Did you know they are

most likely to get killed or injured in their tenth year on the job? That's just about the time they start to think they've seen it all. They've adapted extremely well to past challenges but have become less open to new information that would allow them to adapt to new challenges. That's why firefighters, like people in other organizations, should constantly be encouraged to imagine different possibilities.

In wilderness fire training, for example, it is crucial to learn how to escape from flames when you are in danger of entrapment. One way to do this is to drop your tools so that you can pick up speed. The problem is, it feels very unnatural to firefighters to drop their tools—for them, it is almost like losing their identities. In very recent training, therefore, firefighters play at dumping their packs; they explore what it feels like to run both encumbered and unencumbered. The crucial point in this exercise is that firefighters learn not to take things for granted. If they understand that survival literally depends on the ability to see things differently, they will learn to be more mindful. It's the same for executives: Galumphing helps them enlarge their repertoires and gain confidence in alternative ways of acting. It is particularly critical in high-reliability organizations, where the last thing anyone wants is for people to let down their guard because they think they've seen everything. 

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