Learning When to Stop Momentum

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BY MICHELLE A. BARTON AND KATHLEEN M. SUTCLIFFE

IN MAY 2000, events overwhelmed a fire crew working to burn out an overgrown 300-acre area at the Bandelier National Monument in New Mexico. A tiny patch of flame, which kept flaring up every time firefighters thought they had put it out, eventually escaped and grew into the Cerro Grande wildfire, one of the most devastating in our nation’s history and the cause of $1 billion in damages to the city of Los Alamos and the adjacent Los Alamos National Laboratories. Eighteen thousand people were evacuated; and two weeks later, by the time the fire was finally stopped, some 47,000 acres had been consumed and 300 homes and laboratory buildings destroyed.

Like most disasters, many factors contributed to Cerro Grande. But an important one was what we call “dysfunctional momentum,” which occurs when people continue to work toward an original goal without pausing to recalibrate or reevaluate their processes, even in the face of cues that suggest they should change course. What happened to the firefighters in New Mexico is not unusual. Dysfunctional momentum arises daily in organizations, and sometimes with dreadful results. The members of a project that spiraled out of control look back and wonder: How did we get there? How did we miss the cues that might have signaled huge problems ahead? Or, if they did see the cues: Why didn’t we change course?

Business disasters, like many wildfires, often start out small, with little problems that managers notice but don’t worry about too much. But what happens when small “fires” start to accumulate, grow or change direction? The fact is that when we’re in the middle

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of the action, we often get so engrossed in what we’re doing we don’t notice that things have changed, or we ignore signals suggesting we should alter our course. And the next thing we know, we’re faced with a full-fledged calamity.

Company managers can learn a lot about preventing dysfunctional momentum, and ultimately avoiding business disasters, from people whose everyday job is to manage complex and volatile situations. People involved in high-hazard work such as firefighting have to be more vigilant about emerging problems not only because of their responsibilities to the public but also because their lives depend on it. Thus, they are experts at recognizing and overcoming the forces of dysfunctional momentum — valuable skills to share with the rest of the world. And even on occasions when they fail to get it right, there are valuable lessons for us all.

**Paths to Dysfunctionality**

Organizations and their members experience momentum when they are engaged in a particular course of action, usually aimed at a specific goal. And like physical momentum, which according to Newton’s First Law persists in its state of motion unless acted upon by an external force, organizational momentum also tends to continue unabated unless purposefully interrupted. We call such momentum dysfunctional when people or teams continue to engage in, or inadequately interrupt, a course of failing action.

Under what conditions is momentum likely to become dysfunctional? A brief description of typical wild-land firefighting provides some insight. Managing a wildfire requires numerous people to work together as a team, using equipment ranging from shovels to airplanes. Allowing for varying skill levels and the dangers of exhaustion, they must coordinate with one another to bring the right resources to the right places at the right times. Firefighters must also be supplied with food, water and medical treatment, often in treacherous locales. And those are just the elements that are under human control — wind or weather conditions, for example, can suddenly change. Leaders must grapple with the entire event while experiencing only parts of it firsthand, and it is easy to see how the momentum can become dysfunctional. Such complexity and volatility will sound all too familiar to business managers.

Momentum can become dysfunctional for at least five reasons:

**ABOUT THE RESEARCH**

With so many forces at work within an organization, what can leaders do to ensure that its momentum does not become dysfunctional? To explore that question, we interviewed individuals involved “on the ground” in physically managing or suppressing fires. We interviewed 28 firefighters and collected additional information from other sources, such as peer reports and fire manuals. Respondents came from the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service and Fish and Wildlife Service, and they spanned a wide range of positions within the fire-management hierarchy.

In our interviews we asked respondents to provide a detailed account of their experience on particular fires, from start to finish. We analyzed the data using case analysis, a process that allows unique patterns to emerge by disaggregating an overall situation into a number of separate cases. In total, we collected data on 62 fire incidents, which varied widely in terms of fire size (from a few acres to tens of thousands) and degree of routineness (from prescribed burns to desperate attempts to stop runaway fires). The outcomes of these incidents varied as well. A few individuals described horrific outcomes in which people were badly injured, had to run for their lives or had to take shelter in portable “fire shelters.” (The deployment of fire shelters is considered an extreme measure. Treated almost as seriously as the loss of life, it provokes formal and extensive inquiries into fire-management operations.) Other individuals reported extremely successful outcomes — fires that were managed within the planned burn area or were rapidly extinguished.

The majority of the described incidents, however, fell in the middle. They had good outcomes — for example, fires that remained within planned areas or were eventually suppressed — but only after significant struggles or operational mistakes. Or the incidents had poor but not disastrous outcomes, such as escaped fires that were eventually caught, or were near misses — fires that were becoming very dangerous but were curtailed in time, either through the actions of the fire crews or by sheer luck (such as heavy rains). Of the 62 incidents recounted by our respondents, 24 had good outcomes, 36 resulted in poor or bad outcomes and two incidents did not include enough information to judge the outcome. We then categorized these incidents according to the actions that took place, considering whether ongoing operations were changed in some way (by switching from a direct to an indirect approach to fighting the fire, stopping the firefighting and backing off or turning over responsibility to a higher-level team). Seven incidents, which did not contain enough detail to determine whether or not actions had changed, were dropped from subsequent analysis. That left us with a data set of 55 incidents: 22 included instances of changed actions (19 of which resulted in good outcomes); and 33 included instances in which actions continued in basically the same manner (of these, 29 ended in bad outcomes). We then analyzed all 55 incidents, looking for patterns of behavior, belief and attitude that seemed to contribute to the changed — or unchanged — actions.
1. **Action orientation.** Our culture values action and decisiveness; we get rewarded for making progress and getting things done, especially in hypercompetitive business environments. But when people are under pressure to perform and produce, the last thing they want is someone pointing out irksome problems that imply things may be going awry. Moreover, managers may feel that they don’t have the time to stop, reconsider, reevaluate and slow things down — that they just can’t afford to waffle. When Carly Fiorina came to power at Hewlett-Packard Co., she was thought by some to be just the kind of decisive and forceful leader HP needed; the bursting technology bubble and rising competitive threats at the time seemed to be a call to action. Yet her controversial merger with Compaq Computer Corp., among other things, eventually led to her downfall and her portrayal as a leader too focused on action and not enough on evaluation.

2. **Inflexible planning.** The implementation of plans is critical to organizational success and is one of the key ways in which managers display competence. But planning often locks business organizations into courses of action because the repercussions of going off-plan are so serious. We evaluate people, processes and outcomes against plans rather than reevaluate the plans themselves. When situations are complex and volatile, however, any course of action is likely to require adjustments; organizations that make a plan and stick with it, even in the face of shifting requirements, will eventually find themselves in crisis. We have only to consider the Big Three U.S. automakers to see an extreme example. Even small companies, especially those in shaky or complicated industries, must be prepared to change their plans when necessary. New ventures, already on the edge of existence, are particularly susceptible to changing environments, and flexibility is key to survival.

3. **The ripple effect.** The interdependencies of an organization’s components often mean that small changes in one part of the system can affect multiple other parts. If managers continue blindly with ongoing processes under the assumption that small variations or changes will remain small, they may be surprised by just how big a fire can get. In fact, even when the environment is stable, seemingly insignificant actions occurring in the normal process of running a business can cause ripples throughout the system, requiring adjustments in the course of action. It is critical, therefore, that leaders carefully monitor ongoing events for cues that all may not be well and that they remain flexible enough to adapt swiftly.

4. **Rationalization.** We experience pleasure when our beliefs are reinforced. Conversely, disconfirming evidence causes discomfort, so we tend to ignore it. People tend to treat information that invalidates what they expect either as no big deal or as something to inject into existing beliefs. For example, in her analysis of the 1986 Challenger disaster, sociologist Diane Vaughan noted the tendency to “normalize” cues that space shuttle problems were arising. When burn marks appeared on the O-rings that sealed sections of the booster rockets, managers changed their definition of acceptable risk to include some gas leakage through the gaskets. What might have been a disconfirming signal was incorporated into the existing belief that all was proceeding as planned, and momentum was maintained rather than disrupted.

5. **Deference to perceived expertise.** Finally, momentum is fueled because people often rely on the experience of others, particularly those with more power and status, and abdicate their own responsibility for monitoring situations and taking action to change them if necessary. Lower-status individuals may fail to raise questions or act on their concerns out of fear — fear of repercussions, say, or fear of stepping on someone’s toes. However, even when fear is absent, some people defer to experience because they equate it with expertise; they believe that their more experienced colleague must “know what’s best.” Bernard Madoff himself recently theorized that one reason why Securities and Exchange Commission staff members did not closely examine his multibillion-dollar Ponzi scheme was because of his stature in the industry. But even assuming honesty and the best of intentions, just because someone is experienced does not mean that he is an expert in the current situation. Moreover, when situations are dynamic and
complex, it is unlikely that any one person can hold all the necessary knowledge for managing that situation, however sterling his qualifications may be.

**Leader, Interrupted**

More often than not, efforts to fight wildfires go well — or at least end well. But, as was the case at Cerro Grande, sometimes they beget disasters. In cases where dysfunctional momentum played a major role, we had expected it was caused by firefighters having missed critical cues for changing their actions. Our reasoning came from a large body of research on organizational crises suggesting that many disasters result from failures of foresight — from the accumulation of unnoticed sets of events. In some cases, the data show that there were indeed such omissions. Yet the predominant pattern of evidence confounded our expectations. (See “About the Research,” p. 70.)

It was more often the case that firefighters were so engrossed in the unfolding situation that they failed to stop and absorb the new — and observed — cues into their understanding of what was happening and how to deal with it. What became clear from our data is that dysfunctional momentum is not necessarily a problem of failing to sense important signals but of interpreting and incorporating the cues that are sensed.

When we are involved in a course of action, we tell ourselves a story about what is happening at present and what is likely to happen afterward. The more we become preoccupied with ongoing plans and activities, the more the forces of momentum tend to prevent us from reevaluating that story. In order to overcome the momentum, we have to create interruptions — points at which we can ask: What’s the story now? Is it the same story as before? If not, how has it changed? And how, if at all, should we adjust our actions?

That reevaluation process may sound reasonable in theory, but in practice it rarely occurs. In fact, our respondents reported many instances in which they or members of their crew had seen information that signaled dangerous conditions or potential problems but that did not lead them to reevaluate their approach. For example, one firefighter described his crew’s failure to respond to spot fires — patches of flames escaping a planned burn area, which usually signal that the main fire is becoming too active. Rather than shut down the planned burn and pull firefighters out of the area, however, the crew leader maintained the prescribed action as if nothing was going wrong and the team just continued addressing each new spot fire as it occurred. Unfortunately, because the spot fires were the effect of an unaddressed underlying problem, each time crew members took care of one spot fire another popped up and the crisis escalated.

In that case, it wasn’t enough to notice the spot fires; rather, different actions had to be taken in response. The people in charge needed to stop and reassess what was happening around them. We see this kind of problem time and time again in the business world as well.

We have found that in order to overcome dysfunctional momentum you need to do the one thing you are least likely to want to do in the middle of a crisis. You have to allow yourself to be interrupted, or else create the interruption yourself. Of course, managers are some of the most interrupted people on the face of the earth; part of becoming a manager involves learning how to get work done despite a myriad of interruptions — and how to prevent or minimize them in the first place. But our study suggests that a lack of interruptions may in fact pose a threat to companies’ abilities to make sense of a growing problem, update their understanding of its circumstances and, if appropriate, change the course of action.

Dysfunctional momentum derives from the unchallenged idea that a situation is unfolding as expected. Interruptions — not necessarily of operations but of the thought processes based on assumptions that may no longer be valid — provide an opportunity to question the ongoing story. And it is not the quantity of interruptions that matters as much as their quality. The most successful firefighters in our sample were those who found ways to create or welcome these kinds of interruptions.

**Attitudes of Wisdom**

Our findings show that firefighters redirected their ongoing actions in almost all of the incidents that resulted in good outcomes. In such cases, when wheels are set in motion to prevent or reduce the dysfunctional momentum that would hinder the redirection, two factors tend to be instrumental.
First, individuals have to recognize their own inability to understand fully and predict the unfolding situation by themselves — they have to develop what we call “situated humility.” Second, they must actively create or seek out disruptive information — they have to accept interruptions so that people may reevaluate the story they are maintaining in their minds.

**Situated Humility** When small fluctuations in events can have significant implications and when the events themselves are still unfolding, adjustments in approach are critical. It is precisely these situations in which preexisting assumptions, planned actions and rationalizations are most dangerous if rigidly held. One of the key differences between those firefighters who overcame dysfunctional momentum and those who did not was in the recognition of that danger. The first group were not complacent about the situation, and despite their frequent heroism they did not have their egos on the line. In other words, the more successful firefighters were those who exhibited situated humility.

Situated humility arises not out of personal insecurity but rather from the acceptance that, however confident one is in his own skills and abilities, the situation is so dynamic, complex and uncertain that no individual can be fully knowledgeable under the circumstances. As one very experienced firefighter put it: “As old as I am and as experienced as I am in relation to these large fires, when I walk into the next fire I initially won’t know anything. So I’m not going to come in there with guns blazing.”

Successful firefighters believe that fire is so unpredictable, so inherently unmanageable, that it can never be fully understood. As a result, they question and test their own assumptions and welcome the interruptions that may revise them. The perspective appears to reflect what social psychologist Karl Weick refers to as “an attitude of wisdom” — the knowledge that one does not fully understand what is happening because he or she has never seen precisely this event before.

**Interruptions** Situated humility is critical to overcoming dysfunctional momentum because it directly drives behaviors that create interruptions, which in turn may lead to revisions of beliefs and changes in actions. We identify four such behaviors:

1. **Voicing concerns.** Any good manager recognizes the importance of encouraging employees to speak up about problems or concerns. People closest to front-line operations, after all, are most likely to be the first ones to notice that situations may be going awry. We expected to find, therefore, that voicing their concerns was one way in which firefighters transmitted new and critical information to crew chiefs and other decision makers. But we were surprised to learn that voicing one’s concerns was critical even when leaders already knew the information. More than simply transmitting data, when people express their concerns aloud they create a kind of shared artifact. The statement is now out there, hanging in the air, and must now be addressed — acknowledged, acted on or perhaps dismissed, but in any case attended to. In that way, the statement creates an interruption in the way of thinking about the situation. By voicing a concern, someone is basically asking, “What do we now believe is going on?”

As we learned with the Challenger disaster, ignoring information that makes us uncomfortable, or that disconfirms our beliefs, can have consequences far beyond what we anticipate.
One firefighter recalled working on a fire that seemed to be becoming especially active. His team noticed the quick shifts in fire behavior as all around them trees were bursting into flames — cues that would have been very hard to miss. At first, however, no one spoke up. It was only when he finally put into words what everyone was already seeing — namely, that the situation was unsafe — that the crew members paused long enough to reassess their actions and then pulled back to a more indirect approach to fighting the fire. Recalling the incident later, our respondent said it was as if his boss had been waiting for somebody to say something. No new information was passed on, but by giving voice to what everyone saw, he disrupted the momentum of their ongoing actions and gave his boss and the crew the pause they needed to reevaluate.

2. **Being skeptical of experts.** We also saw many instances of individuals not speaking up about impending dangers. The most common reason for that, however, was not what we might have expected. We know that people sometimes don’t voice their concerns because they fear repercussions — that in one way or another they will be punished. But we found that fear was not the primary cause of silence. Rather, individuals often refrained from mentioning indicators of potential problems because they assumed that more expert firefighters had already noticed and evaluated those indicators. In one of the worst occurrences of our sample — a prescribed burn that escaped and became a major wildfire — our respondent recalled feeling very uncomfortable about the conditions under which the fire was initially lit. To her, it seemed too dry and windy. Yet because she had little familiarity with that particular kind of terrain, and because the team leader was a veteran of the force with many years of experience, our respondent assumed she couldn’t possibly know something that he didn’t and therefore said nothing.

A postmortem review of the escaped fire revealed that many others had also deferred to the leader’s expertise despite their own concerns.

In a contrary example, another young firefighter, a trainee who was also working under a very experienced commander on a prescribed burn, noticed that the wind had picked up and the fire was beginning to spread unexpectedly. The commander did not appear to be concerned that the fire might escape. But the trainee, realizing that it was making a run toward an area outside the planned burn, persuaded his commander to rearrange resources to stop the run. Thus, the potentially escaped fire was contained without ever becoming a wildfire. When recalling the event, the trainee acknowledged his boss’s experience level but realized that in this instance he knew the burn plan better; and often, just because of where he was physically located near the fire, he had more information about what was happening. In other words, he had less experience generally but in this case just as much, if not more, expertise. Recognizing that fact allowed him to speak up and interrupt what could have become dysfunctional momentum and a disastrous outcome.

3. **Seeking diverse perspectives.** When people, especially leaders, seek out a range of perspectives, they are actively interrupting their own thought processes and actions, thereby creating space to reevaluate the situation and potentially take different and more effective actions.

Perspectives can vary by level of expertise, by physical position with respect to the fire or simply by personal interpretation of what is happening. One respondent suggested that he sought out and listened to the rookies on his team because they often had the most up-to-date training in fire management. Also, they asked the kinds of fundamental and sometimes critical questions that he and other experienced firefighters were unlikely to ask.
Another respondent emphasized the importance of looking at the fire from the air, from the ground, by using maps and by frequently contacting team members working on different parts of the fire. By drawing on all these perspectives, he said, it was possible to create a more comprehensive understanding of the fire. Moreover, with each new perspective came an opportunity to reassess the situation.

In one striking story, a respondent recalled a summer fire that appeared to be sweeping down a valley toward a dam and some central power lines. All resources had been placed in its apparent path, but when the incident commander went looking for more information, he found on his team an individual who had worked as a river guide in the area years before. That crew member told him that in the summer months strong afternoon winds would blow in as the valley heated up, likely causing the fire to take a dramatic 90-degree turn toward a completely unprotected community. The commander redirected his forces, and when the fire behaved exactly as the crew member had predicted it would, the team was prepared, and the town was protected.

4. Creating availability/accessibility. Many of the incidents in which actions continued along a disastrous path had decision makers not only failing to seek out other perspectives but also making themselves unavailable to those perspectives. In one particularly mismanaged fire, a firefighter recalled the leaders’ deliberate inaccessibility to other team members. For example, they designed the fire-management plans early in the morning, wrote them on a briefing board and then left before anyone could provide additional input. Also, they held briefing meetings in a room with only enough seats for themselves, discouraging others from participating. These practices streamlined the leaders’ deliberations but in the end resulted in extremely unsafe conditions and a great deal of contention on the fire lines.

In contrast, successful fires tend to be characterized by a great deal of communication — between team leaders and crew members, among crew members and between leaders. In fact, one safety officer suggested that he could evaluate the safety of the overall operation simply by watching leaders to see how well they maintained contact with their crews.

If leaders are not accessible, they are much less likely to experience interruptions. Of course, that is precisely why many managers close their office doors or avoid places where they might get “sidetracked.” They don’t want to be interrupted. But that can also mean avoiding critical opportunities to stop and ask, “What’s the story now?” Interruptions force us to reconsider whether we really know what is going on and how well the present actions are working.

**Putting It Into Practice**

Once we’re fully engaged in our plans and activities, we have a tendency to continue what we’re doing — that is, to resist changing our course even when redirection might be for the best. But as philosopher John Dewey put it, “life is interruptions and recoveries.” By accepting or even creating interruptions, in other words, we can often prevent or overcome dysfunctional momentum in our own situations. In summary:

**Cultivate situated humility.** You can be confident in your skills but humble about the situation. Even the most experienced experts cannot know how a dynamic situation will unfold. Ask yourself: How might the future differ from our expectations? How might changes or problems in one part of the business unexpectedly affect other parts? What parts of the situation can’t we see? Try to create healthy skepticism about what you know and a greater awareness of what you don’t know.

**Encourage skepticism to balance overreliance on experts.** When a skeptic makes an independent effort to confirm or refute an expert’s view, there are now two observations where originally there was one — a strike against complacency. More generally, it is important that everyone’s voice be heard and that participants, in presenting their own points of view, avoid trying to argue so strenuously that they fail to listen respectfully and attentively to what others have to say. When that happens, advocacy replaces analysis, and the ability to discern critical details — those that can help solve problems — is lost.

**Actively seek out bad news, and use small problems as opportunities for people to learn more about their system.** It’s clear that subordinates are
more likely to report good news than bad to their superiors, but that tendency is only exacerbated when people in power are known to dismiss information at odds with their prevailing beliefs. Instead, actively seek out bad news and use the acquired information as an opportunity to learn.

Think and question out loud. Giving voice to what you are observing and thinking helps reveal your assumptions, allowing you and others to revise them if necessary. Also, when you inquire publicly, that helps people to understand what is going on and provides a model for them to emulate.

Make yourself physically and socially available. Don’t succumb to the temptation to simplify your decision making by avoiding others. Reward managers who stay current on operations. Being attentive to activities on the front line means you are more likely to catch problems while they are still small.

Communicate frequently and, when possible, in person. Face to face is the richest medium for communication because it allows messages to be tailored to the specific receiver and context. Moreover, it conveys multiple cues that allow for a range of meaning, and it provides the opportunity for rapid feedback. With more and richer communication, it is possible to maintain a more nuanced and complex understanding of the situation. As richness is lost, so is key information.

Seek out a variety of perspectives. Because crises often arise when small problems in areas tangential to your own suddenly escalate, it is useful to connect with people who see different parts of the organization than you do and who worry about different outcomes. Members of diverse groups should be encouraged to share the unique knowledge they each hold and not limit themselves to the information they have in common.

Dysfunctional momentum occurs not necessarily because people are ignorant, risk-seeking or careless, but because they are human and have as much trouble in controlling momentum as they do in surmounting inertia. Overcoming dysfunctional momentum requires the recognition that we are in a complex situation, one in which our own narrow viewpoint and snapshot in time is unlikely to provide sufficient insight. By deliberately creating interruptions in our thought processes — not to disrupt, but to check and update — we are more likely to change our story when revisions are most needed.

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