

Lecture Text

Michael A. Roberto

Fatal Ascent: Leadership Lessons from the 1996 Everest Tragedy

(edited for clarity)

Introduction

Good afternoon. Welcome back to HBS. Thank you for coming to listen on such a beautiful sunny afternoon. For those of you who don't live in New England anymore, it's been quite a rainy, wet, and cloudy spring here in Boston. Today is one of the first really beautiful days, so thanks for taking a little bit of time to come here and listen to this talk.

I've been talking about an interesting idea for a few months—the leadership lessons from Mt. Everest. I'd like to spend some time in the next hour talking about the 1996 tragedy on the mountain. In 1996, Scott Fischer and Rob Hall, two of the world's most accomplished mountain climbers, took two expeditions to the top of the mountain. These expeditions were paid client expeditions, meaning that people from around the world paid Rob and Scott something on the order of \$60,000 to \$70,000 to guide them to the top of the mountain. Rob, in particular, had an amazing track record of bringing people to the top. He had been to the top four times, and he had guided thirty-nine clients to the top during that time. So he had a tremendous record. They went with him and they climbed the mountain that day, and they did reach the top, but five of them did not make it back down. Five of them died, the deadliest day in the mountain's history to that point. And the interesting thing is that among the five were both Rob and Scott, the two guides who were so accomplished.

Today I'd like to talk to you about what the lessons for business leaders are from this case, from this stunning story, which many of you may have read about. Of course, the book *Into Thin Air*, written by Jon Krakauer, was based on this story. Jon is a journalist who happened to be on one of these expeditions and so he was able to write a first person account of what happened.

Why Study Everest?

Why study Everest? There's sort of a long tradition here in schools of business and management of studying fiascos, catastrophic failures, and tragedies from other fields, and

trying to learn from them and apply them to the field of business. So, for example, there have been many, many articles and books, over the years, written about things like the Bay of Pigs Invasion, the Challenger and now probably the Columbia space shuttle disasters, the Three Mile Island accident, and the Mann Gulch firefighting disaster of the 1940s. These are classic business school cases that are now taught, and that have been taught over the years.

The Root Cause Trap

Now what's interesting is that the main idea that I want to share with you today, beyond Everest, is that many times when we look at these tragedies and try to derive lessons for leaders, whether they be business leaders or government leaders, we fall into the root cause trap. We hear it in business all the time: what's the root cause of the problem? We're searching for the one thing that explains why these people died, or why the Bay of Pigs Invasion was such a failure, or why the Challenger blew up during launch. And we seem to almost enjoy pitting competing theories against one another.

And I'm going to propose today that this search for a root cause is actually futile and non-productive. In fact, in most of these very complex catastrophic failures, you can't identify a single root cause. You have to have a framework for thinking about it that goes beyond that. I've been sort of concerned, since I spent a lot of time studying Enron, that everyone was searching for the one thing that explained that company's collapse. Given how complex that business was, and that organization, it is hard to believe we could pinpoint one thing. Even when the recent space shuttle incident happened, I found it almost alarming that they were searching for one root cause. And I thought, "There is some scholarship here that says that that may not be the right way to think about this incident." So that's what I'd like to talk to you about today in the context of Everest.

Three-Level Framework

In an article I wrote for *California Management Review* in the Fall of 2002 I analyzed this tragedy and built a framework for thinking about it by looking at three levels. First I looked at the climbers as individual decision makers. And I want you to think about them as individual decision makers just like managers out in the field running businesses. And I want you to recognize that we all, as human beings, have certain cognitive limitations. We're not machines. We're not computers. And we as human beings all make a series of systematic biases or mistakes in the way we make judgments, particularly when we use our

intuition. It's not a knock on us. It happens to all of us: experts, novices, people from all fields—medicine, law, business, etc. And I'll note that some of these are amazingly glaring in the case of Everest. So that's the first piece of the puzzle.

The second piece is that these are groups. These are teams of people climbing the mountain. And as teams, they were dysfunctional. And in particular, they were dysfunctional because every team can be thought of as having some shared belief, in particular, some shared beliefs about whether dissent is acceptable, whether it's okay to take interpersonal risks and say, "I think the direction we're going in is wrong." Some groups have a belief that it's okay to do that. Other groups have a belief that says that that's basically career suicide to do that. So we'll talk at the group level.

Finally, we'll look at the organization level, the entire expedition. And we'll look at what I'll call "system complexity," that there are certain kinds of organizations that have characteristics of complexity that make them extremely prone to catastrophic failure. Consider Three Mile Island. Lots of work has been done on the nuclear power plant accident that happened there some twenty years ago. And it turns out that nuclear power plants, not just because they're nuclear, but because of the nature of the way they're organized and the technology is built into the plant, are very prone to failure. I say very prone. Fortunately, a lot of safeguards have been built to try to protect against that. But they are prone to failure because of the complexity inherent in running one of them.

So we'll talk about these three levels—not just that there are three different ways to explain the tragedy, but that they're related. That is, the problems at the group level exacerbate the individuals' ability to make good judgments. The problems at the group level also exacerbate some of the issues of complexity in the system. And they all work together to create a vicious cycle which leads to tragedy in some cases. That's the idea.

Background: The 1996 Expeditions

The background: two expeditions. Adventure Consultants and Mountain Madness were the name of these companies charging considerable fees to folks to climb the mountain. Rob Hall was leading one expedition, having led four successful ascents. Thirty-nine clients got to the summit. He had these two guides who were working with him whom he was paying to help him guide the clients to the top. Among his clients are two somewhat famous people: Jon Krakauer, the journalist who wrote the book *Into Thin Air*, and Dr. Beck Weathers. Many

of you may have heard of him. He is the doctor who became totally disoriented during the climb, left for dead by his teammates. Eighteen hours later, he crawls into the tent, alive. And they rescue him in a daring helicopter rescue. He'd lose his fingers, nose, toes, all kinds of things. Amazingly though, he survived. Very, very interesting story.

Mountain Madness, led by Scott Fischer, was the other team. He had only been to the top of Everest successfully one time. But he had climbed many of the other tallest mountains in the world, including mountains that are considered, in many ways, more challenging than Everest. One of his guides was Anatoli Boukreev, a very accomplished Russian guide. Among his clients, Sandy Pittman and Klev Schoening are two of the more famous: Klev because he was sixty-eight years old and was regarded as one of the great climbers of the 1950s and '60s. And here he was in 1996 trying to climb, I believe, with his son or nephew. And then Sandy Pittman, who was also a journalist. At the time she was the wife of Bob Pittman, the Chairman of AOL. And she was there, like Krakauer, to report on what was going on.

Individual Level: Cognitive Bias

Let's start dissecting the tragedy. First, let's start at the individual level. We all have what's called cognitive biases. These are systematic biases that impair our judgment and choices. They affect experts as well as novices, and they have been shown to affect individuals in a wide variety of professions. There are three of them that are prevalent here. One is the called the sunk cost effect. Does everyone understand what this is? You all probably have seen this in your businesses. This means that I've put so much effort, so much money, so much time and energy into this project. It's not going well, but I can't stop now. I don't want to waste all that effort. See, all that effort sunk. It should be totally irrelevant to your decision to go forward. But that's not the way we think. We can't put ourselves past that sunk cost. We factor it in when we shouldn't. And often we find ourselves throwing good money after bad. We've all probably seen this in organizations. In the context of a mountain, it means you keep on climbing because you're 90 percent of the way there, even though there may be extreme danger looking at you, perhaps because of a storm coming, or your own physical condition deteriorating.

Second is overconfidence bias. It turns out that we're all systematically overconfident in our judgments. This has been shown most glaringly among physicians. This is alarming for all of

us as we go to the doctor. But physicians turn out to be systematically overconfident in their judgments on the diagnoses they make. It's very interesting.

Lastly, there is a recency effect that we all fall prey to. That is, when we think about probability, we don't think about the full sample of events that we have experienced in our life. We tend to overweight the things that we have experienced recently, so that we overestimate or underestimate the probability of something happening because we just can't seem to think about the whole sample of events that we have experienced in our lives. We become too obsessed with what's happened to us recently.

And this has been shown, for example, in a wonderful study that showed that engineers fall prey to this in trying to understand the causes of problems with certain technical projects. They tend to look too much to recent experience with that technology or with that type of project. Even though engineers are trained to think statistically, they fall prey to this effect.

Sunk cost effect

So let's look in detail at the sunk cost effect. This is the tendency for people to escalate commitment to a course of action in which they have invested a great deal of time, money, and energy. To avoid this, Hall and Fischer, the two guides, chose to adhere to a turnaround time. Fischer called it the "2:00 rule." If you aren't on top by 2:00, it's time to turn around. Darkness is not your friend.

Now let me explain how this works. The way the final push to the summit happens is that you get to camp four and you sleep there from mid-afternoon until about 10:00 p.m. At 10:00 p.m., you get all your gear together and, at midnight, you head out from camp four for the summit. And you climb through the night, in the dark, until you get to the summit, hopefully by 2:00 in the afternoon. So that's fourteen hours, right? A fourteen-hour climb to the summit. You get there. You say, "Hurray!" And, usually within seconds, you turn around and hustle back down the slope for fear of dying because you never know what will happen at the summit. You don't stay there and celebrate. You really don't stay there long. You get up there by 2:00, and then you scurry down. And the reason you don't want to get there later than 2:00 is that you want to scurry down and get back to camp four, and shelter, by nightfall. You don't want to be caught trying to climb down the mountain and then have nightfall hit. You want to climb down in daylight because it actually can be very treacherous to try to climb down during the night. It's easier to climb up during the night, much harder

to come down during the night, it turns out, for a variety of reasons. So it's about an eighteen-hour ordeal for the final push to the summit.

And there's a rule that says that if at any point, you don't think you're going to get to the top by 2:00, you should turn around. At least that was the rule that these guys purported to follow. What's interesting is that they totally and egregiously ignored those rules during the climb, totally ignored the rules. The last person got to the summit at 4:15 or 4:20. Two and a half hours is a big deal in the context of this. By the way, if anyone has questions, please throw them out. I'd be glad to take as many questions as you like during the presentation.

So let me give you some examples, some evidence of this sunk cost effect, and the kinds of things people say. Because when you hear these in your own organization, these kinds of comments, I want your ears to perk up, and I want you to think, "Should we really make this capital investment? Should we continue to throw money at this project?" Listen for things like, "I've put too much of myself into this mountain, into this project, into this plan, into this factory." Think about where you might hear, "I've put too much of myself into this to quit now without giving it everything I've got."

Listen to Krakauer explain this phenomenon. He says, "You must be exceedingly driven to climb this mountain. But if you're too driven, you're likely to die. The clients had each spent as much as \$70,000 and endured weeks of agony to be granted this one shot at the summit." So it's interesting how he immediately couches it in terms of the sunk cost, doesn't he? The \$70,000 and the weeks of agony. Also notice this idea of one shot. How many times in organizations do we hear, "Well, this is our one opportunity to make this acquisition, to do this deal," etc. Is it really the one opportunity? Advocates often will try to make it sound like it's now or never to convince us to do something. In this case, this had very much been cast as one shot for folks. You've got your one shot to make this happen.

Cotter, another guide, said, "It's very difficult to turn someone around high on the mountain. If a client sees that the summit is close, and they're dead set on getting there, they're going to laugh in your face and keep going." So even if you tried, as the leader, to turn them around, how willing would they be to listen to you, even though, purportedly, you're supposed to be listening to them?

David Breashears was on the mountain that day. David is one of the most accomplished climbers in the world. He was leading another expedition there to create the IMAX film about Everest, which was an enormous success. David was on the mountain climbing ahead of these folks. He didn't like the weather, and he turned around and went back down and regrouped while these guys and women were making their way up. He later did summit, some two weeks later, after helping to rescue the people who got in trouble. David happens to live here in the Boston area and has helped me a lot in analyzing this, and came to my class and spoke to my students. And here's what he said to them. "So many times on mountains"—in fact, he also said, "So many times in life, and in all aspects of our lives"—"we get past this point where we don't know how to turn around. This ship, this locomotive is steaming up the mountain, and the only reason to keep going is the ship is already underway." Think about how that applies in the business context.

Overconfidence Bias

The second set of individual biases in the way we make judgments is overconfidence. Scott Fischer said, "We've got the Big E completely figured out. We got it totally wired. These days, I'm telling you, we've built a yellow brick road to the summit." That's what he said a few weeks before getting to the mountain. Sounds just comical, doesn't it? Amazing.

Rob Hall, when someone on the climb—I think it was Krakauer—was questioning their own ability to climb the mountain, said, "It's worked thirty-nine times so far, pal. And a few of the blokes who summited with me were nearly as pathetic as you." Krakauer said, "Hall believed a major disaster was going to happen on the mountain that year. However, Rob's feeling was it wouldn't be him. He was just worried about having to save another team's ass."

And Krakauer said, "It was amazing that the clients had incredibly positive self-assessments." He described them as clinically delusional. [Laughter] Very confident assessments, extremely confident. It turns out that not only are we confident in our judgments, but when we see others fail, we attribute it to their own personal mistakes. When we fail we systematically attribute it to the environmental things that happen. It's just the way we are as human beings. It's something to be careful about.

Recency Effect

Lastly, the recency effect—that is, we overestimate the probability of recent events. We place too much emphasis on information and evidence that’s readily available. Breashears: “Several seasons of good weather had led people to think of Everest as benevolent. But in the mid-80s, before many of the guides had been on Everest, there were three consecutive seasons when no one climbed the mountain because of the ferocious wind.” And he said, “Season after season, Rob Hall had brilliant weather. He had never experienced a storm high on the mountain.” When, in ’96, he encountered a storm, that was novel to him. Even though he was “an expert,” and he had been on the mountain six times, and he had been to the summit four times, those were all recent experiences when they had had an unusual stream of good weather seasons. And that was what he was using as a basis.

Breashears had been on the mountain going all the way back to ’82. And so, when Breashears got up high, he sort of knew. I said, “David, how did you know to turn around? Was it windy? Or was the snow falling?” “No, it wasn’t falling yet. The wind wasn’t bad yet. I just looked at the clouds. And my experience there said to get down that mountain.” Rob couldn’t do that because he didn’t have a broad enough experience to understand and intuitively be able to make that judgment.

So that’s the individual story, examples of the kind of biases and judgment that we all make. We all don’t ignore sunk costs. We throw good money after bad at times. Those of us who invested in the stock market recently understand that. We all are overconfident, and we all tend to overemphasize recent events, things to be careful of in business, in life, in climbing mountains. That’s one side of the story.

Group Level: Team Effectiveness

But these were not just individuals climbing the mountain, they were teams. They were teams that were supposed to be working together, and they weren’t effective. They were very dysfunctional. Breashears says, “These were not teams at all.” Jon Krakauer says, “They were teams in name only.” What was wrong? What was wrong with these groups?

I want to introduce a concept to you called “psychological safety.” My colleague, Amy Edmondson, has done a lot of work on this. She defines it as the shared belief that a team is safe for interpersonal risk taking. What she means by that is that you don’t believe that the group will rebuke you, marginalize you, or penalize you for speaking up or challenging

prevailing opinions. In a group where you feel okay, you feel safe challenging the existing views, expressing dissent, those are groups in which there is psychological safety. These groups, I would argue, did not have this at all. They did not have a forum for candid dialogue.

If you think about what we hear, what is extolled about strategic planning at General Electric or at Emerson, under Chuck Knight, or at Intel under Andy Grove, you hear about constructive conflict, and the fact that everything was fair game, that there was candid, open, vigorous dialogue and debate in those strategic planning processes at those leading firms. You have to have a certain level of psychological safety in order for that candor to happen. And I would argue that these teams didn't have it. There was very little candid dialogue. And here is the point when someone might ask why they did not adhere to the turnaround rule. People saw them not adhering to the turnaround rule, thought it was a mistake, and when asked afterwards said, "I was afraid to say that I disagreed with the decision to go on." And I'll show you some of that data.

What kinds of things diminish psychological safety and make it hard to have candid dialogue in a team? First, if there are major differences in status, not just rank, not just title, but in status among the people within a team, for example, as Amy Edmondson's work shows, in a hospital. She and I have written a case on this. Think about a hospital, doctors versus nurses, the big difference in status there, and what that does to the ability to have candid discussion in a hospital about things.

Second is the leader's own style or behavior. Do they coach and support people who don't have views that are mainstream or that exist with the dominant view? Or do they do things that signal their unwillingness to have anything other than yes men in the organization?

And lastly, there's the level of familiarity or prior interaction. You have to have a certain amount of trust in the others you work with in order to express dissent. These groups had not met one another until they got to Kathmandu in Nepal and organized as an expedition. Pretty hard to trust people whom you didn't get to know until you got to Everest. Those all affect team psychological safety, and make it difficult to learn from your mistakes, have candid dialogue, and make good decisions.

Status Differences

First, let's talk about status differences. Krakauer: "There was a clear guide/client protocol. On this expedition, Harris was one of the guides on his group. He had been cast in the role of invincible guide. They had to look after me and the other clients. We had been specifically indoctrinated not to question our guide's judgment." Andy Harris, at one point on the mountain, was completely mentally incapacitated, cognitively not with it. And Krakauer and the other clients let him go off to his death, afraid to say, "You don't look good, Andy," because he was supposed to be the expert. When he said, "There's no more oxygen left at camp four," they went with his judgment, even though it didn't make sense. There was more oxygen there. He was so incapacitated that he didn't know that there was more oxygen there.

And it wasn't just between the clients and the guides. It turns out that the pecking order was even more subtle. Beidleman was another one of the guides. He said, "I was definitely considered the 'third guide,' so I tried not to be too pushy. As a consequence, I didn't always speak up when maybe I should have. And now I kick myself for it." Here's what's amazing. He was on a team with a leader, with Anatoli Boukreev, and he considered himself third in that pecking order, in terms of expertise. Why was he third? It isn't just because of how many mountains he climbed. It turned out that because Anatoli had a better relationship with and was more highly regarded by Scott Fischer, Fischer paid Anatoli Boukreev \$10,000 more than he paid Beidleman to work for him. And Neal knew it. And he said, "Well, I must not have the same status and expertise as Anatoli," and so he didn't speak up. It affected his own perception of his own status, and he didn't speak up. Interesting. These are not teams with big hierarchies, the way that large organizations have. And yet, there are these status differences that emerged that affected candid discussion.

Leader Behavior

The leader could do things subtly or not so subtly to seriously squash candid dialogue. And I think this is a big issue in corporations today. We've seen it now in the FBI, in Enron, in all these places where people weren't willing to offer, or only a few very, very brave souls were willing to offer dissenting views. And perhaps, in many of those case—I know it for a fact at Enron—in those organizations this was an issue. I mean we've read so much about it at places like Enron, and the FBI, and other places. And the leaders contribute to this. They make it difficult for people to express dissent.

Hall wasn't subtle. Before they climbed the mountain, Rob Hall said, "I will tolerate no dissension up there. My word will be absolute law beyond appeal. If you don't like a particular decision I make, I'd be happy to discuss it with you afterward, and not while we're up on the hill." Now at first glance, this looked sensible to folks. You know, he's the leader. He's the expert. You ought to listen to him when you're up on the mountain. The problem is that there's a presumption there that says that those leaders will be in the best physical shape up on the mountain, for example, and in the best mental shape, that because they are the best, they'll always be the ones. But it turned out that Scott Fischer was in serious physical disarray high on the mountain. The dissension that should have happened should have simply been, "Scott, you don't look so good." But no one was even willing to say that. There are quotes in the various accounts of people saying they were afraid to even tell Scott that he didn't look so good.

___: Egos.

Yeah, their egos. There was a presumption there. Everything about the rules and procedures—I'll talk about this later—was organized with a presumption that the leaders would always be in the strongest climbing shape throughout this expedition. And therefore, they organized the safety procedures around that presumption. Interesting. Krakauer says, "Passivity on the part of the clients had thus been encouraged throughout the expedition."

Lack of Familiarity

This is the last thing that affected the willingness to dissent. Boukreev said he was very uncomfortable because he didn't know many of the other climbers, and he did not find it easy to develop relationships with others during this very, very difficult climb. And he said, "As a result, I tried not to be too argumentative, choosing instead to downplay my intuitions." And Krakauer said, "A group of complete strangers. Trust in one's partners is a luxury denied those who sign on as clients on a guided ascent. We were a team in name only."

Now what's interesting here, of course, is that too much familiarity, being together with the same group of people for too long, can also squash dissent. You all start to think alike. So think of it as sort of a curvilinear thing. If you're not familiar with one another at all, you won't have vigorous candid debates because you don't trust one another, and you're not

sure what people will think. And then things get much better. But then, as a management team, if you've been together for a long time, in the same industry and the same company, with the same very successful financial record, what happens? Then groupthink starts to set in, and you all start to think too much alike. Or you get along so well with one another that you want to go along to get along. So think of this as sort of a U-shaped problem, and these teams were at the beginning of it. Many other teams in business, or at the other end of it, also have a problem here.

Organizational Level: Complex Systems

The third round of explanations, now that we've talked about the individuals and we've talked about the groups, is at the level of a complex system. And I want to be very specific about what I mean by complex systems. There are two characteristics of what I will call and what scholars have called a complex system.

First, there are complex interactions. This is when different elements of a system interact in ways that are unexpected and difficult to perceive or comprehend. That is, there are things that are going on here that you can't link together ahead of time. You can't understand the processes fully because of the level of complexity. So you don't understand fully how things will interact before you embark on it.

And second, there's "tight coupling." What does tight coupling mean? A tightly coupled system has four characteristics. The processes within the system are time dependent. There is a very rigid sequence of activities that's required to operate the system. There is one dominant path to achieving the goal, and there is very little slack. That is, very little buffers, very little inventory, if you will, if you're in a plant. And if a system has both unexpected interactions and is tightly rigged and coupled, then small little problems in one area can cascade and create a catastrophic event. This is what can happen. This point has been thought of primarily as a technical problem. This can happen in a nuclear power plant. But now we're beginning to understand that this happens in systems that are much more human. This can happen climbing Everest, or in other kinds of systems. It certainly can happen, by the way, in financial systems. Think about how small errors in the financial system can bring about massive collapse of an institution, for example.

Breashears—this is interesting—did not know this concept at all. But when he described climbing Everest, he said, "I think of an expedition as a very complex organism. Rob Hall

had designed a complicated system that was very rigid.” Very interesting language to choose. It was very rigid. Rob Hall believed in having lots of procedures. The scary thing is that safety procedures sometimes add to the complexity of a system, and make it even more likely that will you get a problem.

Krakauer said, “Four of my teammates died not so much because Rob Hall’s systems were faulty—indeed, nobody’s were better—but because on Everest, it is in the nature of systems to break down with a vengeance.” So these people, not even knowing this concept, are saying that there’s something about the way you organize an expedition that has built-in rigidity that makes you susceptible to having this small series of things start to interconnect in a way that creates a massive breakdown.

Complex Interactions

Let me examine, first, the complex interactions in climbing Everest. It turns out, on these expeditions, that a whole series of things happened that didn’t look connected. But let me quickly try to connect them for you, and explain how things cascaded on these folks. First, there was a customs problem in Russia, long before the expeditions began, that made it difficult to get some of the supplemental oxygen, tents, and other supplies to Nepal. Second, there was a failed negotiation with *Outside Magazine*. Scott Fischer wanted to hire Jon Krakauer for his mission. But he went through a long process of negotiation, and that failed, and instead he hired Sandy Pittman. It turned out to have been a crucial thing later. There were also problems with the charter plane. There was a porter strike in Nepal, the porters who were going to help bring the supplies to base camp. And there was very poor weather. All of that contributed to making Fischer’s job, when he got there, logistically a nightmare. Because remember, as the leader of the expedition, Scott had to basically get all of the logistics in place to support bringing eight clients and six more Sherpas all up the mountain. And all of those things, which are very hard to anticipate, all made it very difficult for him, personally, not only to organize the mission, but to acclimatize to the oxygen level. He had to do a lot more scurrying around. He had to do a lot more trips up and down the mountain organizing. And so he did not acclimatize as well. And this led to physical problems which plagued him throughout the mission.

Now later, as they’re going up the mountain, they came to a point where they assumed that a prior expedition, the Montenegrins, had installed ropes, guide ropes, up toward the summit. In fact, they had not gone all the way to the summit with the ropes. At some point,

the climbers got to a point where they saw that there were no more ropes. Krakauer was one of them. But the safety procedures said that unless one of the lead Sherpas or Rob Hall was with him, he couldn't go any further, beyond a certain point on the mountain. So when he got there on summit day, and there were no ropes ahead of him, he had the rope, he and the other climber, but the safety procedures said you can't go on. So they were forced to wait, essentially, and what happened was a big bottleneck started to emerge on the way to the summit.

Now, what's interesting to consider is who should have been there? What was the assumption? The assumption was that the lead Sherpa would be up there near the front, because he was a very experienced climber. But he wasn't. Why? Because Sandy Pittman, the person who was hired because of the failed negotiation with *Outside Magazine*, got into trouble the prior day. And the lead Sherpa attached a rope to her, and basically dragged her up the mountain for six or seven hours. This led to him finding himself completely exhausted and being far from where he thought he would be on summit day. So he wasn't near the front. The radios had been distributed under the presumption that Rob Hall and the lead Sherpa were the strongest climbers. So Krakauer didn't have a radio to tell anyone that this bottleneck was emerging because no one presumed Krakauer would be at the front. Now this is just snowballing, the safety procedures on top of what was going on, a complex set of systems, all creating a huge bottleneck near the top of the mountain.

Tight Coupling

But that alone doesn't explain why all of a sudden a catastrophic event happens. You also need for this to really snowball, tight coupling. First, you need time dependence. And you have that on Everest. Time dependence means there's a rigid time schedule on which things have to happen. There is a very narrow window, in early May, when you can try to reach the summit of Everest. If you don't make it in early May, the monsoon season comes. You have to get out of there. You're going to die. So you basically have about three weeks where there are summits. That's why you only read about summits during early May, and then it's over. You won't hear about any more. You've heard about a bunch now in the last few weeks, and it's over until next year, except for some very crazy people who try at other times. But I mean, it's pretty much only now. There's also this tight eighteen-hour schedule for the final summit push, where you leave at midnight, and you have to get back down by 5:00 p.m., 6:00 p.m. the next day before it darkens. So you're on both a rigid schedule by the month and a rigid schedule on that day. Second, there's little slack, physical limitations,

and the supply of supplemental oxygen, rope, medicine, etc. You don't have a lot of buffer in your supplies because you can only carry so much oxygen, so many tents, etc., up the mountain.

Think, by the way, about a manufacturing system. Do you have severe time dependence in the manufacturing system? Do you have very little inventory buffers in the system? Do you have a strict sequence of activities? Here, you did. You have an acclimatization routine. You have the establishment of camps. There was almost a book, a cookbook, on how to climb Everest that they were following. And it was a very strict sequence of activities. And lastly, is there a single path to the goal? Can you have workarounds? Well, in some manufacturing systems, you can have workarounds. You don't like them, but you can. There is no workaround here. There's one path to the top. It's through those four camps. And by the way, the hardest part is often coming down, and you can't have helicopter rescues above a certain altitude. So, if you get stuck, you're done. You're not going to come down any other way. You have got to hike up and down. How many manufacturing systems have both complex interactions and these four characteristics? They're prone to big failures, just as climbing the mountain is prone. Everybody follow that? This is probably the hardest argument to try to explain.

Integrating the Perspectives

The point here is that they're not three different explanations, but that these three things, when they all happen together, make you even more prone to a failure. So by thinking about these three levels of explanation, we hope you'll be able to spot the potential for failure in your own organization.

First, how do individual cognitive judgment biases affect psychological safety? Effective teams discuss issues openly, and encourage members to express dissenting views. Presumably, the more candid dialogue you have, the more it's likely that someone will catch your overconfidence, or catch you falling prey to the sunk cost effect. The lack of candid dialogue means that more of these errors in judgment fall through the cracks. That's the first problem.

The second problem is cognitive biases in a complex system. If cognitive biases, these judgment errors, are prevalent and the system is also complex, well then what happens? Those small errors in judgment can trigger one of these vicious breakdowns, this series

interconnected breakdowns. That's what happens in complex systems. It's not one big thing that blows up, but some small things all happen at once, and create a catastrophe. Well, the more systematic errors in judgment there are in the system, the more likely it is that one small thing will lead to a whole series of other things.

Lastly, how do complex systems and psychological safety relate? Well, the absence of constructive dissent makes it difficult to identify and solve problems before they trigger a series of other breakdowns. And it's often hard to recognize that a single human error doesn't actually cause failure in complex systems.

An example of this is this case we wrote about the hospital. Have you all been reading about medical errors and how awful they are, at least here in the States? I think medical errors are the fifth leading cause of death in the United States, according to the Institute of Medicine. Most of the current research says that hospitals are very complex systems, that we like to think that someone is engaging in malpractice, and that we can identify them and blame them for these medical errors. In fact usually it's a whole series of things that have worked together to create one of these medical errors: a mislabeled prescription that leads to a problem with the nurse programming the pump, which leads to a problem with the doctor, then, administering morphine, and the whole thing cascades. And if you don't have constructive dialogue in these complex systems like this, it's often hard to catch that error before the thing cascades and creates a huge catastrophe.

So the three perspectives: individual errors in judgment, teams that are dysfunctional and can't engage in candid dialogue, and systems which have an incredible amount of complexity and tight coupling. All those things interact, and they can create massive disasters in organizations, like they did on Everest.

As an example of this, when Pittman was asked, "When you were struggling, and the Sherpa was hauling you up the mountain on a rope, you must have known this could not be good for your team, that the Sherpa was expending all this energy. Why didn't you say, look, you shouldn't be doing this?" She said, "Well, I didn't unclip myself because of respect for his authority because he was one of the lead Sherpas."

Again, what do you see? Status differences, lack of psychological safety, unwillingness to express dissent. Boom, you see the whole thing cascading. And Krakauer says, "It didn't

seem like a particularly serious mistake at the time. But it would end up being one of many things, a slow accrual, compounding steadily and imperceptibly toward a critical mass.” That’s the idea of catastrophic failure, that it’s often a small set of things that start to cascade over time, not a single root cause.

Implications for Leaders

What are the implications for leaders? As you think about this case, you realize that, as leaders, you have to balance some very delicate competing forces in your organizations and in your management teams.

Balancing Competing Forces

First, don’t take away from this that you don’t want to be confident. Of course you need to be confident. In fact, it’s been shown that one of the things that befalls leaders in dynamic industries is that they hesitate too much before making decisions because a little doubt creeps into their mind when things are so dynamic. And so, often, very effective leaders will find ways to overcome that little instance of doubt that often leads to too much indecision. For example, it’s been found in Silicon Valley with many of those high-charging firms that did very well in the ‘80s when the computer industry was built that those fairly young CEOs, in many cases, had senior sages, expert people who were their confidants in the management team, whom they would go to when they had to make a particularly tough decision to get a little bit of assurance to help them over the self-doubt. You have got to have that. But on the other hand, you don’t want to tilt too much toward overconfidence after years of success. So that’s one balancing act you have to have.

The second is dissent. Clearly, you need to encourage dissent. It’s a big message I’ve been saying today. But of course, at some point you decided, and you’re in implementation and you have to decide how much more dissent, at what point do we all have to unify and get behind this plan. That’s a delicate balance.

And lastly, commitment. You really need people to be extremely committed to implement effectively. But if they’re too committed, the sunk cost effect may sink in, and they may start throwing good money after bad. So you have to be aware of these three delicate balancing acts.

Shaping Perceptions and Beliefs

You also have to be really careful about your own subtle actions, some symbolism you may engage in, some signals you may send as a leader that shape the perceptions and beliefs of the people who work in the organization. You may say something. You may not even realize how important it was that you said it. But it may make people very unwilling, for example, to share bad news because of some small thing you said when something happened three years ago, and it stuck in employees' minds. So be very cognizant of that, that sharing bad news, something that's been so much in the public spotlight in this whole era of corporate scandal, that people have been so afraid to do this in so many organizations. And often, it's triggered by not some big loud speech where somebody says, "Don't bring me bad news" but by much more subtle signals that are sent by the people at the top.

Learning from Failure

And lastly, learn from failure. I think there's a great lesson here. I said earlier that we all fall prey to the attribution error, which is that when we fail, we blame the environment. When others fail, we say, "Must have been their fault. They must have done something wrong." It's very easy here, and in all tragedies or catastrophic failures or bad business failures, to say it's human error. It's one person who made the mistake. It's that CEO who blew it. Why? Because if we can blame one single person, we can convince ourselves that we have learned from their failure, and we would never make those same mistakes.

So you could do this with Everest. If you just look at Everest, and think technically about the problems that Rob Hall had, you can convince yourself that you'll never make those same mistakes. So therefore, I'll climb Everest now because I'm a really good climber, and I've learned from Rob's mistakes. I'll climb Everest. This is very dangerous. Because often, it's not just one person making dumb judgments, but it's much more complex why failures happen. You have to be careful not to just attribute it to, "That CEO was kind of dumb. I won't repeat his mistakes, or her mistakes." It's a very dangerous way to think about learning.

The Myth of a Specific Cause

So the big message here is that there's often not just this single human error, but instead complementary and mutually reinforcing explanations for why things happen.

This is Scott Snook, who's here on the faculty. Some of you may know him. He taught at West Point for many years. He's an officer in the U.S. Army. And he wrote about the friendly fire incident in Northern Iraq in the early '90s in a very famous book called *Friendly Fire*. And, in looking at it, he similarly concluded, as I have, that you can't find fault with one particular person or one particular cause. Instead, he too, looked at multiple levels, individual, team, and organization, and tried to find a way to explain the friendly fire. He said, "I am more convinced than ever that we cannot fully capture the richness of such complex incidents by limiting ourselves to any one or even a series of isolated, within-level accounts. We must capture the dynamic, integrated nature of organizational reality." He said, "Be wary," and he was talking about the military, but it certainly applies to business, "of just saying let's find the one officer who blew it." That's why this friendly fire incident happened. It's just not that simple.

So the myth of a specific cause, my last slide and my concluding remark. I leave you with what Anatoli Boukreev said in a book he wrote about this 1996 tragedy just before, by the way, he died on another mountain in another climb. He wrote, "To cite a specific cause would be to promote an omniscience that only gods, drunks, politicians, and dramatic writers can claim." Thank you very much. If other people have questions, you can come down.