Harvard Business School (HBS)
Crisis Management for Leaders
5-Program virtual series
Summary notes
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# Case Study: Chilean Mining Rescue and Summary

## Faculty: Professors Amy Edmondson and Dutch Leonard

### 1. Introduction

Over the course of three weeks (March 20-April 10), Harvard Business School (HBS) faculty ran a five-webinar series on crisis management through the COVID-19 event. The coronavirus outbreak has disrupted every organization and each of our lives in unexpected ways. For business leaders, managing this specific event risk and confronting the associated uncertainty and change has been complex and all-encompassing.

This paper captures my summary of the fifth and final webinar for the Armstrong Wolfe COO/CCO community. I hope to give you, as leaders, a time to stop, take a breath, and reflect on the powerful guiding principles shared by HBS faculty members and alumni business leaders to help you manage and lead during these uncertain times.

In this session, Professors Dutch Leonard and Amy Edmondson took the HBS alumni through the HBS Chilean mining rescue case study, focusing on how teams who had never collaborated came together to face this crisis event. Professor Edmondson, who studies Teaming, psychological safety, and organizational learning, led the session by focusing on how groups of people come together to learn, innovate, and complete an impossible rescue. We focused on the ways many leaders brought together a number of teams who did not having ample time to practice interacting successfully and efficiently. For a deeper dive, see the webinar recording link at the end.

2. What is Teaming?

Professor Edmondson started investigating how people work in crisis situations by studying teams in hospital emergency rooms. Here, teams are not static, as many situations will bring different teams together to solve problems. The emergency room is a place where teaming is complex and unpredictable. Quick decisions need to be made, and work can be iterative.

In her book, *Teaming: How Organizations Learn, Innovate, and Compete in the Knowledge Economy*, Professor Edmondson shows that organizations thrive, or fail to thrive, based on how well the small groups within those organizations work. The pace of change and the fluidity of most work structures means it's not really about creating effective teams anymore, but instead about leading effective Teaming.

Based on years of research, this book shows how leaders can make organizational learning happen by building teams that learn. The problem is that teams (and other dynamic groups) don't learn naturally. Edmondson outlines the factors that prevent them from doing so, such as interpersonal fear, irrational beliefs about failure, groupthink, problematic power dynamics, and information hoarding. With Teaming, leaders can shape these factors by encouraging reflection, creating psychological safety, and overcoming defensive interpersonal dynamics that inhibit the sharing of ideas. Further, they can use practical management strategies to help organizations realize the benefits inherent in both success and failure.

3. The Chilean Mining Accident

On 5th August, 2010, there was a massive rock collapse in the San José copper and gold mine, located in the northern part of Chile. 700 metric tons (771.6 US tons) of rock caved in the mine, trapping thirty-three men 700 meters (2,300 feet) underground and five kilometers (three miles) from the mine's entrance. There was a small refuge, approximately 2,000 feet underground, with supplies for two people to survive for 10 days. There was no known technology in the industry capable of drilling 2,300 feet through the rock within 10 days, and no one even knew if the 33 miners were still alive.

To give you a perspective of the distance that had to be drilled to rescue the miners: the Burj Khalifa stands at 828 meters (2,700 feet), the Empire State building stands at 373 meters (1,250 feet), and the Eiffel Tower stands at 300 meters (1,063 feet).

This situation had many unknowns. There were multiple teams, on the inside and on the outside of the mine, that had to communicate, work together, experiment, and innovate iteratively. The teams were faced with unprecedented technical complexity. There were not many rescues like this that had ever been tried before. The only one that had come close is known as the Quecreek Mine Rescue, where 9 miners were trapped 61 meters (200 feet) underground.

The teams in Chile had many resource constraints, with time being the biggest challenge. There were several groups involved, such as the government, public/private companies, and the families of the miners, who wanted a say in how to save them. Along with all of this, there was intense media coverage that made the situation more emotionally and politically reactive. It is safe to say that there was a dim chance of success, as it was high risk and emotionally difficult.

4. The Teams and the Plan

There were three separate, but interrelated teams:

The miners – They were aware there was minimal chance of survival, so they had to team up to survive physically and psychologically. They established routines, prayers, storytelling, and division of food.

The engineers – There were engineers from within the industry involved, but also from outside areas like the oil recovery industry and NASA, to name a few. In total, a dozen corporations from around the world participated in this rescue. Their initial challenge was how to come together, innovate, and experiment, while minimizing risk.

The executives – President Sebastian Piñera, Laurene Golborne, and André Sougarret, were the executives that took the initial lead. Mr. Golborne was a businessman who had become the minister of mining and had a limited background in the field. Mr. Sougarret was the engineer who led the rescue.

The plan started with the executive leadership setting the goal, establishing the tone of communication, and bringing the teams together. President Piñera went against what everyone advised, which was that this was not a government problem, and he should step away. His communication to the world was, "We will bring those men home dead or alive, sparing no expense." What he conveyed with this message was that there was going to be ultimate commitment and support to the miners, their families, the country, the engineers, as well as the world.

Leadership can be lonely when everyone tells you not to get involved, but he led with his principles. He framed a clear goal by saying what to do, but not how to do it, and that it would be achievable, dead or alive. He challenged the innovators to innovate.

President Piñera and Mr. Golborne asked the industry, "Who do we have that can lead this rescue?" André Sougarret, a mining engineer with 20 years of experience, was chosen because he was known for his composure under pressure. He had remarkable technical competence and a strategic approach. He had ample patience and assertiveness, as well as an exceptional ability to

listen to all sides and reach intelligent conclusions. He had a tendency to speak frankly with everyone whether they were above or below his authority.

This "unsolvable" problem was then converted into two "challenging" problems:

- Case A: to keep the miners alive. The challenge was to devise a way to make a hole large enough to send food, medicine, and communication technology … without causing more damage to the cave. The problem became possible and challenging, but not unsolvable. They set a deadline of 17 days to achieve this.
- Case B: to rescue the miners, which became a 50-day ordeal.

Day 17 brought the first major victory. Sixteen days into the execution of the Case A challenge, with no progress in the drilling, the engineers started losing hope. On day 17, when the drill was pulled out of the ground, the engineers saw that the miners had marked it with red paint. This mark told the engineers that someone was alive. They didn't know their condition or how many, but someone was alive. What factors contributed to this success?

First and foremost, the teams tried many things at once. They did not know what would work, and they kept an open mind. The executive team trusted and relied on the subject matter experts, staying out of their way. The engineers used several drilling pipes and tried several solutions. They also had their minds open to different ways the miners might communicate with them, which is how they noticed the paint mark! This was followed by a note from the miners that read, "Estamos bien en el refugio, los 33." ("We are well in the shelter, the 33 of us.") At this point, some miners were near death, but now the supplies could keep them alive.

At the same time, the executive and engineering teams had to deal with many different opinions, conflicts, and disagreements, making it difficult to quickly unite as a team that had never worked together. How did they deal with these Teaming issues?

5. The Research on Teaming in Crisis Situations

The research shows that, first, there needs to be a sense of shared purpose that is profound and motivating. Through President Piñera's statement, the executive team defined the overall goal, driven by their values: "We will bring those men home dead or alive, sparing no expense." They then brought in and provided the engineers and subject matter experts everything they needed to achieve the goal. The engineers then set out to divide the problems into small, achievable goals.

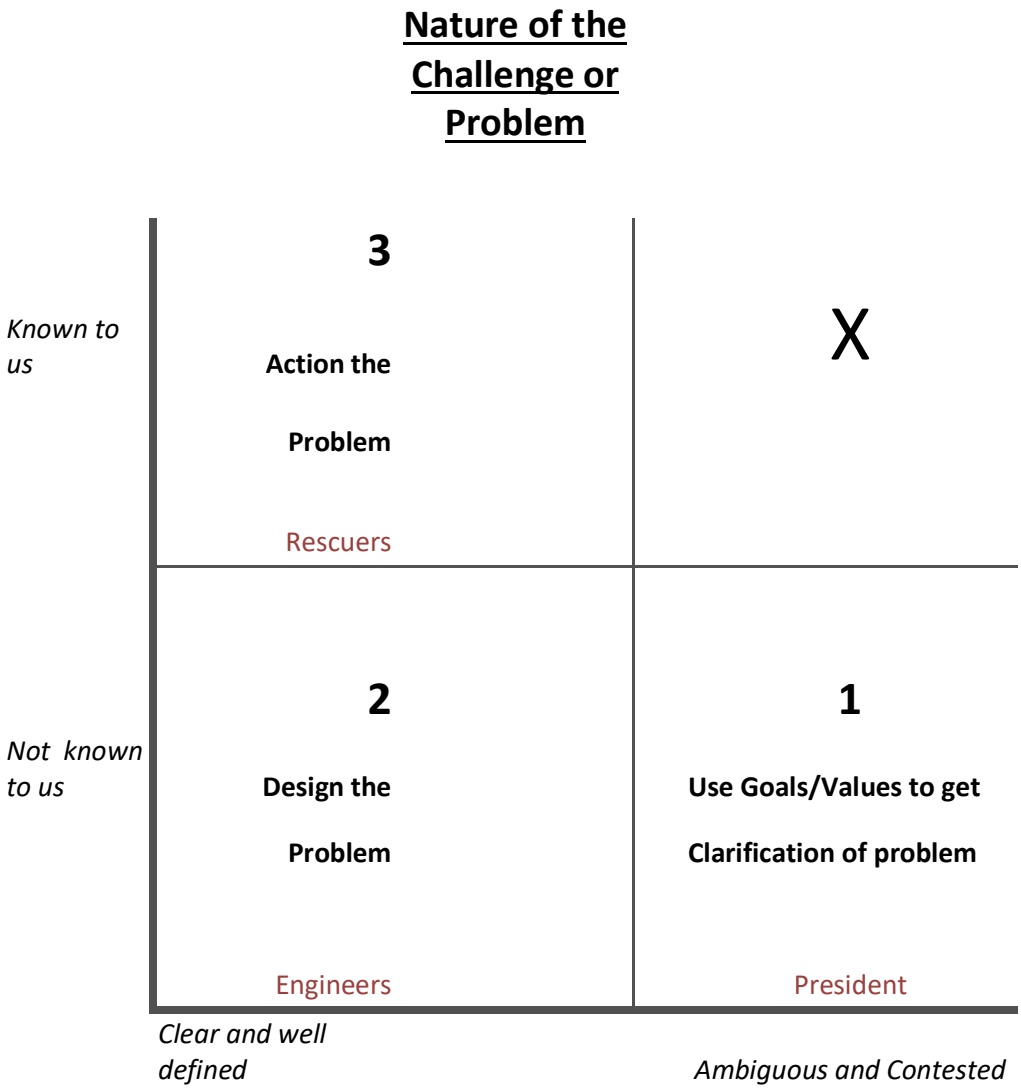
Teaming across expertise boundaries requires a willingness to listen to ideas, no matter where they come from, and an ability to assess the situation, independent of formal power or position. In this rescue, some of the ideas that made a difference came from a 23-year-old technician, proving that no input should be discounted.

There needs to be a culture of innovation, as teams will be dealing with many unknowns. But an innovation culture may feel chaotic and even playful — how will this culture work in a crisis situation? The answer lies in its other attributes. An innovation culture is also deeply focused. It is spirited but disciplined, values deep expertise and broad thinking, promotes high standards, and tolerates low-risk failures.

The engineers needed to persist through failure, have a disciplined process, and create an iterative routine. They broke down the problem into significant but manageable pieces. Case A, getting a small pipe to the miners, was not easy, but it was manageable. For the teams, this was significant enough to take a step forward. Early success fueled the possibility of succeeding on the overall goal. Throughout the process, people were humble and willing to learn. They also set an end date for Case A to focus on, which was the date past which the miners would not be able to survive.

The engineers and rescuers approached the execution of the rescue as a learning process. They recognized that being agile and iterative was critical. They knew they were going to deal with many unknowns and that they needed to attempt things that had never been done before. Most importantly, they knew they had to act, experiment, learn, and persevere or pivot quickly.

The chart below shows the nature of problems and challenges. The process from 1 to 3 was repeated over and over, at multiple stages of the rescue.



6. Communication for Leaders During a Crisis

Through a crisis, the most effective leaders communicate honestly about facts. They offer a rational basis for hope and optimism, and they show an emotional understanding and empathy of the situation.

New Zealand Prime Minister Jacinda Arden communicated effectively during the Christchurch crisis. On 15 May 2019, there was a mass shooting at two mosques in Christchurch during Friday prayer. Arden spoke while the event was still ongoing and she did not know all the facts (how many people were impacted, why the shooting was occurring). She was clear in her communication and focused on the facts she did know.

She articulated that this was an extraordinary and an unprecedented act of violence. She conveyed that it would most likely impact people who were refugees and that they were part of the New Zealand community. She also said that the person responsible was "not one of us" and that her thoughts were with those being impacted, the families, and the Christchurch community. She stated that the advice from police was to stay indoors, which she acknowledged may be hard for many, while urging adherence to this guidance. She gave people the assurance that police were actively managing the situation and that hospitals were dedicated to treating all people coming in. Finally, she communicated that agencies were convening as she spoke and that she would meet them shortly in Wellington.

She started off with empathy. She then went to the facts, conveying the gravity but also framing the fundamental values of the country and this situation. She was good at taking over what she was responsible for but deferring other responsibilities to the subject matter experts.

There are four parts to a crisis communication:

1. A statement of what one knows and the basis of that knowledge
2. A statement of what it being done
3. A statement of what others should be doing
4. An understanding, showing empathy and a perspective of the situation's impact

Another way to look at this is through the 4 M's of effective communication:

1. Message – What action(s) do we want taken?
2. Member – Who is the target of this message?
3. Method – What communication tool(s) will work best?
4. Moment – When is the best time to convey this message?

Leadership in a crisis requires the process of bringing a new and generally unwelcome reality to an individual, group, or organization. Crisis situations are stressful, and pacing is critical. Leadership needs to move fast enough to get the job done, while being cognizant of the stress people are going through. Time is an adaptive resource; make it right so people learn without getting anxious. Create structure and think about people. Have a process that gives them confidence, ensure there is teamwork, and over-communicate.

7. Closing Comments

Throughout the five-webinar series, the HBS professors took us through their research on crisis management and explained effective processes in dealing with crisis situations. The 2,000+ business leaders who participated shared the challenges they were facing with the COVID-19 crisis and how they were dealing with each situation. The topics covered in these webinars included creating a risk management framework, how to lead in a crisis, coping with immediate cash needs and availability, how to create an effective team in responding to a crisis, managing the supply chain, and ending with this HBS case study on the Chilean mining crisis.

My key take aways from these webinars:

1. Lead with values – In the crisis situations we reviewed, all the leaders led with their values and/or the values of the organization.
2. Innovate – When innovating, uncertainty goes up, but if done correctly, learning will increase as well. Start practicing now, as you do not want to begin your innovation process during a crisis.
3. Leadership Traits – Effective communication is about being direct and honest, while providing hope (The Stockdale Paradox). Ensure that all voices are heard. During certain times, get out of the way and be guided by the subject matters experts.
4. Empathy – It was inspiring see that the leaders we reviewed in each case and the business leaders on the call all led the crisis they were facing with empathy towards the people being impacted by the situation.

**Harvard Professors**

Amy C. Edmondson is the Novartis Professor of Leadership and Management at the Harvard Business School, a chair established to support the study of human interactions that lead to the creation of successful enterprises that contribute to the betterment of society.

Edmondson has been recognized by the biannual Thinkers50 global ranking of management thinkers since 2011, and most recently was ranked #3 in 2019. She also received that organization's Breakthrough Idea Award in 2019 and Talent Award in 2017. Her most recent book, *The Fearless Organization: Creating Psychological Safety in the Workplace for Learning, Innovation and Growth* (Wiley, 2019), offers a practical guide for organizations serious about success in the modern economy and has been translated into 11 languages.

Herman B. "Dutch" Leonard is *George F. Baker Jr.* Professor of Public Management at the Kennedy School, as well as *Eliot I. Snider and Family* Professor of Business Administration and co-chair of the Social Enterprise Initiative at Harvard Business School. He teaches leadership, organizational strategy, crisis management, and financial management. His current research concentrates on crisis management, corporate social responsibility, and performance management.

**Webinar link**

https://www.alumni.hbs.edu/events/Pages/crisis-management.aspx

**Author**

Joe Noreña is currently an industry advisor with Armstrong Wolfe, a board advisor to a healthcare AI start-up, a practicing executive coach, and an investor in start-ups. Joe is also a mentor with BUILD, an entrepreneurial program for high school students. He has been a Managing Director for over 20 years with major financial institutions in New York, London, and Frankfurt as global head of digital businesses, global and regional Chief Operating Officer, and global and regional FX trading head. He was also partner and president of a start-up global macro hedge fund and worked at Bridgewater Associates.