# ERWANN MICHEL-KERJAN

**INTERVIEWED BY JACQUELINE LEGRAND, COO AT MDS HOLDING.**

## WHAT DEFINES A CATASTROPHIC EVENT, AND WHERE IS RISK MANAGEMENT HEADED TODAY? JACQUELINE LEGRAND GETS THE ANSWERS.

**Jacqueline Legrand:** Dr. Erwann Michel-Kerjan, you are an authority in managing the risks, the financial impact and the public policy challenges associated with catastrophic events. How do you define a catastrophic event?

**Dr. Erwann Michel-Kerjan:** How you define a catastrophic event really depends on who you are. At an individual level, a car accident can be a catastrophe. If you're a publicly trade company and your stock drops 30 percent in a week, that can be catastrophic. A government that just suffered large economic losses or a high number of fatalities from a disaster, well, that is clearly a catastrophe, too. There's not a single definition of what a catastrophe is. It really depends on your perspective. But everybody understands that a catastrophe is an untoward event that inflicts unusually consequential consequences. In the past few years the world has seen so many catastrophes that affected several continents and trillions of euros of losses that there is a fast-growing interest in these questions among prime ministers' and presidents' office as well as by many company boards and in civil society. I just returned from G20 meetings in Mexico since this question is on this year's agenda.

**JL:** What projects are you currently working on?

**EMK:** There are quite a few. Let me mention three briefly. The first has just been completed here in the US with my team at the Wharton School. We worked closely with key decision makers to reform the residential flood insurance market in the United States. The President signed a new law in July that was based on some of the work we had done in the past few years recommending to move away from subsidized rates to risk-based premiums. The reform of the National Flood Insurance Program was a perfect example of how leading research institutions can create value by giving policymakers the tools they need to make informed decisions that will affect millions of people. This program covers $1.3 trillion of assets, so this is a substantial move.

On the corporate side, my Wharton colleagues Howard Kunreuther, Mike Useem and I are leading an ambitious project that aims at developing good

> "I actually do not think the end of the world is coming on December 21, 2012!
> Maybe it is because I was first trained in mathematics and physics and that I've enjoyed the practice of martial arts for many years (Japanese Karate).
> It's a good way to stay balanced.

> “This is the flipside of globalization: risks are becoming more global, too.

practices for C-suites and Boards of S&P 500 firms to approach and act upon catastrophic risk management today. We have already conducted interviews with 100s of these firms. We have also reviewed public data on companies' risk propensity and analyzed the stock market performance of these 500 firms over the past 10 years. One preliminary conclusion is that many more Boards are now considering catastrophe risk management as a strategic issue. Three or five years ago this would have been a non-issue for many of them. Times have changed. Results of our analysis will be made public this coming year – stay tuned!

Internationally, I'm advising the World Bank on a project for the Kingdom of Morocco. The goal is to develop with them, from scratch, their entire national risk management strategy, which includes everything from probabilistic risk assessment, to risk management and financing. We're looking not just at natural catastrophes such as floods, droughts, earthquakes and tsunamis, but also investigating the country's exposure to commodity price volatility, social risks, and agricultural risks. That's a big endeavor and I think we're going to show very quickly that if a country can be much more proactive at managing its risks, that same country could achieve greater political stability and bring in more foreign investments. There are reasons why Morocco went through the Arab Spring very differently than many of its neighbors in that part of the world.

**JL:** Who are you working with in Morocco for this project?

**EMK:** A project like this has to be by and for the country, which is exactly what we do there. We work with all ministries. The initiative is coordinated by the Ministry of General Affairs and Governance under the Prime Minister and in collaboration with the Swiss Cooperation.

We are currently discussing the opportunity for Morocco to develop a National Risk Management Office (with a national risk officer equivalent to the Chief Risk Officer for a corporation), which would make Morocco the first country in the world to make such an important move. If it happens, this is likely to become a best practice that many other countries could be inspired by and which would respond pretty well to the new risk architecture. The strategic framework we have developed there could then be used elsewhere.

**JL:** Such an approach would benefit some emerging countries in Asia that are growing at the moment but prone to a lot of catastrophic events that can have a negative effect on the whole world.

**EMK:** Absolutely. We've seen that last year with Thailand when the world realized, once again, that we're living on a small highly interconnected planet. This is the flipside of globalization: risks are becoming more global, too. Maybe ten years ago, many business leaders could have said, "Well, I don't really care much about what's happening in Thailand; most of my business is here in the US or in Europe." Today, if your factories or some of your suppliers (or the suppliers of your suppliers for that matter) are in Thailand, you want to make sure your entire global supply chain is resilient, not just the first cycle of large suppliers....

**JL:** You raise a good point here. Globalization has definitely brought tremendous benefits to our economies. Do you see governments, major companies, and organizations working together to create risk management and risk transfer solutions for our world to sustain large scale disasters of all kinds?

**EMK:** In terms of collaboration between the public and private sectors, to be somewhat blunt, it works well on paper. In reality though, there are inherent tensions. This often does not make a good start for long-term sustainable collaboration. There are good examples of public-private partnerships where you can mutually bring the strengths of the two camps together, though, and that works well at managing risks that can affect both sectors.

**JL:** More generally, where is risk management going?

**EMK:** This is a very exciting time given the immensity of the task before us.

I like to say that given all the catastrophes and crises that have unfolded in just the past ten years, risk management has become too important to be left to risk managers alone. And those who realize that will be the winners. Is this the same type of risk management that we used to do ten years ago? No, it has to be much more global and strategic risk management. It's a risk management capacity that requires not only good quantitative skills but also to be adaptive and to be able to translate risk dilemmas into boardroom discussions.

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It's about moving from the over-protected silo approach ("my favorite risk, is more important than any other") to a much better understanding of the interdependencies of the risks not only within the organization but within the entire international environment in which your organization operates. This is a world where being agile and responsive are maybe the most important attributes.

**JL:** Speaking of agile brains, You are part of the forum of Young Global Leaders (YGL), which is a unique recognition on the World Economy Forum for exceptional young leaders who share commitment to shaping the global future. What is that all about?

**EMK:** I feel honored to be part of this fantastic group of amazing leaders. The idea came from Klaus Schwab, founder and chairman of the World Economic Forum (he was in his early thirties when he created the Forum, by the way). While senior world leaders have been gathering together in Davos for the past 40 years, Professor Schwab realized the importance of preparing the next generation of leaders as well.

The program was originally called the Global Leaders of Tomorrow, I think, and counted among their ranks several young, yet not well-known, individuals. Their names were Bill Gates, Larry Summers, Condoleezza Rice, Tony Blair, Angela Merkel, Philipe Calderon...who all made history later in their careers, as we know. The program was reinvigorated early 2000's after being dormant for several years. And it's now called the YGL forum and lead by David Aikman at the WEF under the high patronage of Her Royal Highness Queen Rania of Jordan.

Every year, the Forum selects 100 or so of the most promising global leaders, based on what they have already achieved. We all come from different fields, cultures, backgrounds, etc. and from all continents. We get together several times a year for five consecutive years to work on joint projects. This has always been a very humbling experience.

**JL:** Back to large-scale disaster and not only natural catastrophes but all kind of disasters. What is your view for the future?

**EMK:** No doubt we'll see more and more of them. That's something that I've been talking a lot about. What many people have still failed to do is to ask the right question, which is not whether we'll have another hurricane in Florida this year or social unrest in China next year. The real question is what is going on here, what are the fundamental trends that are changing the world we're living in so profoundly that the whole system is becoming much more sensitive and volatile?

Understanding the symptoms is the first step to cure. Take natural disasters. It's not rocket science but just common sense to see that more people are living on planet Earth and most of these people are in highly hazard prone areas.

Consider the east coast of China for example. We could very well see a massive typhoon hitting Hong Kong, Shanghai and then Dalian next year. The ripple effects worldwide would be extreme. Or take the state of Florida in the United States, where the population increased about 600 percent in the past 50 years. Many more people in harm's way means more exposed assets, too: mathematically, the same hurricane that had mild effects 50 years ago would be catastrophic today.

We'll see many more costly disasters unless we start putting preparedness and resilience very high on the agenda. The good news is that there is a general recognition that the past few years are just the beginning of a new era of catastrophes we need to seriously prepare for. That's true for virtually all industry sectors.

International organizations, pushed by their donors, have started to seriously work in this catastrophe risk management space in recent years, and this is very encouraging: that's true of the OECD and its 34 industrialized member countries; that is true of the World Bank in low- and middle-income countries. And this year, even the G20 recognized disaster risk management as one of the key priorities as mentioned.

It is also important to keep in mind that risk management should not be a brake against transforming business opportunities into reality; rather it ought to be about sustaining this vision. Risk Management 2.0 as I've called it is all about value creation. More boards and government offices are interested in it, also, and are looking for high-level expertise. For instance, if the world is going to see more disasters, can we develop new technologies, new services, new products that will help during disaster time? What financial products do we design to take advantage of increased volatility in the financial markets? There are massive untapped opportunities with this new (and very unusual) way to think about risk management and value creation.

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**Erwann O. Michel-Kerjan is Managing Director of the Wharton School's Risk Management and Decision Processes Center, and teaches Value Creation in the Wharton MBA program. He is also Chairman of the OECD Secretary-General Board on Financial Management of Catastrophes, which advises its thirty-four member countries on these issues. Dr. Michel-Kerjan was named a Young Global Leader (YGL) by the World Economic Forum (Davos), an honor bestowed to recognize and acknowledge the most extraordinary leaders of the world under the age of 40; in 2011 he co-led the Global Risks component of the G20 YGL Paris Initiative under the High Patronage of President Sarkozy. He advises private and public organisations on how to better protect against these events and develop innovative solutions that create sustainable value. Dr. Michel-Kerjan is the author of several acclaimed books, including, most recently, *The Irrational Economist* (PublicAffairs, with P. Slovic) and *At War with the Weather* (MIT Press, with H. Kunreuther) which received the prestigious Kulp-Wright award for the most influential book on risk management. He is a regular contributor in the media and has given over 100 public speeches. He has studied at Polytechnique in France, McGill and Harvard. Email: erwannmk@wharton.upenn.edu**

**JL:** It's really about creating value.
**EMK:** Absolutely, and the good news is that we know how to do it: that's the cool part of it.

**JL:** That's where, as people, we have to get creative.
**EMK:** Sure. Creativity, but also concrete implementation with short-term measurable return.

**JL:** One of your main areas of work is the financial management natural disasters and terrorism risk. What solutions are emerging today?
**EMK:** It depends on what markets you're looking at. In the US there are two trends. There has been a radical shift in risk sharing arrangements. It used to be very market-oriented, and it still is, but with a growing role for the Federal Government in terms of risk sharing. We have for instance: a state-run insurance program for earthquakes in California, multiple state insurers to cover against wind loss on the coast, a terrorism risk insurance program which benefits from free up-front federal reinsurance, a federal national flood insurance program, etc.

The pendulum has swung from a world where the government was not covering those risks to one where it does. As the swing happened in America, one can expect to see it in other countries as well, if they suffered from a series of catastrophes.

The other interesting aspect revolves around developing countries asking themselves what type of insurance market they should develop. China is a good example, as it's potentially a huge market. Can they develop large-scale insurance market and if so, what would it look like? Maybe they would create something different from the US or European market because the Chinese philosophy vis-à-vis risk is very different itself. You need to understand the market to develop more tailored products.

As the world is becoming richer, and as people move from being poor to entering the middle class, they buy a car, then buy a house, and then a second car and a second house, and then maybe they start a business. All of that creates huge potential markets for insurers, so these middle class trends in many developing countries represent enormous potential business in the next ten to fifteen years.

Finally, what I'm very interested in is what we call "alternative risk financing instruments." This is where you can start being even more innovative and transfer part of the exposure directly to the financial markets. The first catastrophe bond was done in 1994. With $13billion of outstanding capital the market is slightly growing but it's still very small compared to what it could be. There are reasons for that but maybe in the next five to ten years we can make catastrophe bonds accessible to you and me as individual investors. Imagine that tomorrow you could take 0.001 percent of hurricane exposure in Florida or earthquake in Japan and California as part of our investment and retirement portfolio. There could be regulations so as to limit the maximum exposure you can buy. Wouldn't that create a brand new investment potential and bring hundreds of billions of euros of capital into this market, helping risk financing cost to decrease (in turn becoming accessible to many more countries)? The market would be several orders of magnitude larger than it is today and would also enhance social good. Taiwan and Mexico and several American states have already issued catastrophe bonds, as did the international football federation FIFA to cover the 2006 World Cup final game against a possible terrorist attack, something only few people know.

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**JL:** Investors are not comfortable yet with catastrophe bonds and don't see this as an investment diversification. What is your take on this?

**EMK:** It's because they have a feeling that they can lose all of their nominal if they invest big. And you don't want to be the person at the board meeting being looked by everybody else saying, "How could you lose 100 percent? 100%!" Now if you invest a small part of your portfolio, that's another story, because there is a virtually zero corelation with other assets.

**JL:** You contribute actively to the "Global Risks Report" released every year in Davos since 2006 by the World Economic Forum. What are the risks at the top of governments' agenda, senior management from multi-national corporations, and international organizations?

**EMK:** The Forum partnered with a few organizations (including the Wharton Risk Center) six years ago with the idea of not necessarily quantifying big risks in great detail, but of trying to get a better sense of what's coming in the next five to ten years. We asked what could happen in the next ten years, and then we looked at about 50 risks and we surveyed about 500 top leaders around the world.

It's amazing what you can see coming from very far away. I remember vividly in 2007 that in the Davos release of the report, the top risk was called "Asset Price Collapse" and it's easy now to say well, we were right. At that time we weren't sure whether it would happen this year or the year after, but clearly the status quo was

unsustainable.

The year after that, the top risk was food crisis, and that was six months before the worldwide food crisis hit. You have to understand why we got it right twice: since we were right the first time that the world would see a collapse of very sophisticated financial products, we could predict that what would happen next would be hundreds of billions of dollars moving from very sophisticated assets to very simple assets, known as "the fear factor." And what's simpler than rice?

Billions of dollars moved from sophisticated CDOs to commodities. What happened in a very interdependent world, while markets reacted the way they were supposed to, is that the price went up 100 percent for some commodities. That's great if you have invested in these commodities at the right time, but less so for the 2 billion people who are living on two dollars a day

Many people died, and that's for me a perfect example of trying to move from the silo approach to how things interact

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with each other. It's not complicated to do if you have the right mindset. I think that's applicable for the world as a whole, but also for the individual corporation.

Since 2008, more people are starting to pay attention to what the Global Risk Report says.

In 2012 the top risk was: income disparity. The reality is that 1 percent of the population owns 50 percent of the total wealth and 50 percent of the population owns only 1 percent of it. This disparity is fueling future crises, as I described in an op-ed for the Wall Street Journal a few days before Davos in January.

**JL:** Why is it more an issue today than 20 year ago?
**EMK:** First, because the gap is much larger. Second, because this gap is public information today: Transparency is becoming a big deal and with the development of the Internet and social media, the very poor now know well about the way that the very rich live. Third, this could be okay if government had reinforced social programs to help those in need, but all of this is happening at a time when such programs are cancelled or downsized because of the fiscal situations many countries are in now.

This is a perfect receipt for disaster. Social disaster.

Will income disparity trigger a major crisis next month? Probably not, these trends develop over several years, but who knows when they break. The Arab Spring is a perfect example.

Who's next: Europe, the US, Latin America, or China? What would be the ripple effects on the world economy?

**JL:** Looking at big trends for corporations to evaluate their risks in terms of complexity, what are the other big factors that are starting to change the way companies look at risk management?
**EMK:** Where you generate your revenue is one of these big factors. Many large corporations are now making more than 50 percent of their revenue outside the country they are headquartered in. So, for many of the firms I work with, the big catastrophic risk is not a hurricane or terrorism. It's not even lack of access to financial capital. It's how they will secure skills; the big risk is accessing and maintaining the right human capital. How do you retain talented people? This is a big issue in Brazil for instance.

This is a good example of what I meant earlier by Risk management 2.0. This is not only about fire risk and workers' compensation. It's about adopting a comprehensive view of what could go wrong and how the world is evolving that will affect the assumptions your business model is currently based on.

**JL:** After experiencing the recent catastrophic events and the reality of supply chain risk exposures, we are back to the bottom line of risk management that goes well beyond insurance products.
**EMK:** Sure. You need to understand your full exposure and monitor it. It's both your exposure to inside and outside risks, to national and international risks, to physical, social, financial, geopolitical, health risks, not just your "favorite" one (for example, financial because you are the CFO, workers' risks because you are the VP for Health and Safety). More than one company reacted to the events in Japan and Thailand by starting to monitor the whole supply chain, not just part of it. It's the first step and it's a big step. We also have the technology to do it today at a fairly low cost.

**JL:** To your point about everyone having his or her own pet risk, your Risk Management 2.0 strategy will imply that all departments of a corporation, whether legal, finance, sales, or logistics collaborate together to share the information and create solutions, would you agree?
**EMK:** Let's face it: no one can own all the risks alone. It is crucial to break the risk management silo so that many players in an organization have a important role to play to manage it.

**JL:** Any last words?
**EMK:** Risk Management 2.0 is about doing risk management in a world that has radically changed since 2000, even though many feel uncomfortable with the idea of doing anything else other than the status quo. There will be winners in this new and more dangerous world, and there will be losers. The good news is that many more companies and a few governments have started to become much more strategic about this. They will be the ones to thrive. The others still think of risk as an old-fashioned two dimensional diagram where catastrophe risks have to be low probability. For anyone who watches TV, this assumption is clearly outdated, if not amusing.

I like to think I've helped some countries, firms and organizations to be among those who now thrive.

It has been a pleasure talking to you.