conceptions being recently debunked by researchers (such as Dimitri Gutas and George Saliba). Most of those who theorized about Arabic philosophy did not know Arabic, so they left many things to their imagination (like Leo Strauss, for example). I am a bit ashamed, because Arabic is one of my native languages, and here I was reporting from tenth-hand sources developed by scholars illiterate in Arabic (and sufficiently overconfident and lacking in erudition to not realize it). I fell for the confirmation bias seen by Gutas: "It seems that one always starts with a preconception of what Arabic philosophy should be saying, and then concentrating only on those passages which seem to be supporting such a bias, thereby appearing to corroborate the preconception on the basis of the texts themselves."

Once again, beware of history.

ROBUSTNESS AND FRAGILITY

Upon the completion of *The Black Swan,* I spent some time meditating on the items I raised in Chapter 14 on the fragility of some systems with large concentration and illusions of stability—which had left me convinced that the banking system was the mother of all accidents waiting to happen. I explained in Chapter 6, with the story of the old elephants, that the best teachers of wisdom are naturally the eldest, simply because they may have picked up invisible tricks and heuristics that escape our epistemic landscape, tricks that helped them survive in a world more complex than the one we think we can understand. So being old implies a higher degree of resistance to Black Swans, though, as we saw with the turkey story, it is not a guaranteed proof—older is almost always more solid, but older is not necessarily perfect. But a few billion years is vastly more proof than a thousand days of survival, and the oldest system around is clearly Mother Nature.

That was, in a way, the reasoning behind the *epilogism* argument of the medical empiricists of the post-classical Levant (like Menodotus of Nicomedia), who were the only practitioners to merge skepticism and decision-making in the real world. They are also the only group of people to use philosophy for anything useful. They proposed *historia*: maximal recording of facts with minimal interpretation and theorizing, describing of facts without the *why,* and resisting universals. Their form of nontheoretical knowledge was degraded by the medieval Scholastics, who favored

more explicit learning. *Historia,* just the recording of facts, was inferior to *philosophia* or *scientia*. Even philosophy, until then, had more to do with decision-making wisdom than it does today, not with impressing a tenure committee, and medicine was where such wisdom was practiced (and learned): *Medicina soror philosophiae:* "Medicine, sister of Philosophy."*

Giving an ancillary status to a field that prefers particulars to universals is what formalized knowledge since the Scholastics has been doing, which necessarily gives short shrift to experience and age (too much accumulation of particulars), in favor of those who hold a PhD like Dr. John. This may work in classical physics, but not in the complex domain; it has killed a lot of patients in the history of medicine, particularly before clinical medicine was born, and is causing a lot of damage in the social domain, particularly at the time of writing.

The central things the old teachers communicate to you are, to use religious terms, dogmas (rules you need to execute without necessarily understanding them) not kerygmas (rules you can understand and that have a purpose clear to you).

Mother Nature is clearly a complex system, with webs of interdependence, nonlinearities, and a robust ecology (otherwise it would have blown up a long time ago). It is an old, very old person with an impeccable memory. Mother Nature does not develop Alzheimer's—actually there is evidence that even humans would not easily lose brain function with age if they followed a regimen of stochastic exercise and stochastic fasting, took long walks, avoided sugar, bread, white rice, and stock market investments, and refrained from taking economics classes or reading such things as *The New York Times*.

Let me summarize my ideas about how Mother Nature deals with the Black Swan, both positive and negative—it knows much better than humans how to take advantage of positive Black Swans.

* Empiricism is not about not having theories, beliefs, and causes and effects: it is about avoiding being a sucker, having a decided and preset bias about where you want your error to be—where the default is. An empiricist facing series of facts or data defaults to suspension of belief (hence the link between empiricism and the older skeptical Pyrrhonian tradition), while others prefer to default to a characterization or a theory. The entire idea is to avoid the *confirmation bias* (empiricists prefer to err on the side of the disconfirmation/falsification bias, which they discovered more than fifteen hundred years before Karl Popper).

Redundancy as Insurance

First, *Mother Nature likes redundancies,* three different types of redundancies. The first, the simplest to understand, is defensive redundancy, the insurance type of redundancy that allows you to survive under adversity, thanks to the availability of spare parts. Look at the human body. We have two eyes, two lungs, two kidneys, even two brains (with the possible exception of corporate executives)—and each has more capacity than needed in ordinary circumstances. So redundancy *equals* insurance, and the apparent inefficiencies are associated with the costs of maintaining these spare parts and the energy needed to keep them around in spite of their idleness.

The exact opposite of redundancy is naïve optimization. I tell everyone to avoid attending (orthodox) economics classes and say that economics will fail us and blow us up (and, as we will see, we have proofs that it failed us; but, as I kept saying in the original text, we did not need them; all we needed was to look at the lack of scientific rigor—and of ethics). The reason is the following: It is largely based on notions of naïve optimization, mathematized (poorly) by Paul Samuelson—and this mathematics contributed massively to the construction of an error-prone society. An economist would find it *inefficient* to maintain two lungs and two kidneys: consider the costs involved in transporting these heavy items across the savannah. Such optimization would, eventually, kill you, after the first accident, the first "outlier." Also, consider that if we gave Mother Nature to economists, it would dispense with individual kidneys: since we do not need them all the time, it would be more "efficient" if we sold ours and used a central kidney on a time-share basis. You could also lend your eyes at night since you do not need them to dream.

Almost every major idea in conventional economics (though a lesser number of minor ones) fails under the modification of some assumption, or what is called "perturbation," when you change one parameter, or take a parameter heretofore assumed by the theory to be fixed and stable, and make it random. We call this "randomization" in the jargon. This is called the study of model error and examination of the consequences of such changes (my official academic specialty is now model error or "model risk"). For instance, if a model used for risk assumes that the type of randomness under consideration is from Mediocristan, it will ignore large deviations and encourage the building of a lot of risk that ignores large deviations; accordingly, risk management will be faulty. Hence the

metaphor of "sitting on a barrel of dynamite" I used concerning Fannie Mae (now bust).

For another example of egregious model error, take the notion of comparative advantage supposedly discovered by Ricardo and behind the wheels of globalization. The idea is that countries should focus, as a consultant would say, on "what they do best" (more exactly, on where they are missing the smallest number of opportunities); so one country should specialize in wine and the other in clothes, although one of them might be better at both. But do some perturbations and alternative scenarios: consider what would happen to the country specializing in wine if the price of wine fluctuated. Just a simple perturbation around this assumption (say, considering that the price of wine is random, and can experience Extremistan-style variations) makes one reach a conclusion the opposite of Ricardo's. Mother Nature does not like overspecialization, as it limits evolution and weakens the animals.

This also explains why I found current ideas on globalization (such as those promoted by the journalist Thomas Friedman) one step too naïve, and too dangerous for society—unless one takes into account side effects. Globalization might give the appearance of efficiency, but the operating leverage and the degrees of interaction between parts will cause small cracks in one spot to percolate through the entire system. The result would be like a brain experiencing an epileptic seizure from too many cells firing at the same time. Consider that our brain, a well-functioning complex system, is not "globalized," or, at least, not naïvely "globalized."

The same idea applies to debt—it makes you fragile, very fragile under perturbations, particularly when we switch from the assumption of Mediocristan to that of Extremistan. We currently learn in business schools to engage in borrowing (by the same professors who teach the Gaussian bell curve, that Great Intellectual Fraud, among other pseudosciences), against all historical traditions, when all Mediterranean cultures developed through time a dogma against debt. *Felix qui nihil debet* goes the Roman proverb: "Happy is he who owes nothing." Grandmothers who survived the Great Depression would have advised the exact opposite of debt: redundancy; they would urge us to have several years of income in cash before taking any personal risk—exactly my barbell idea of Chapter 11, in which one keeps high cash reserves while taking more aggressive risks but with a small portion of the portfolio. Had banks done that, there would have been no bank crises in history.

We have documents since the Babylonians showing the ills of debt;

Near Eastern religions banned debt. This tells me that one of the purposes of religion and tradition has been to enforce interdicts—simply to protect people against their own epistemic arrogance. Why? Debt implies a strong statement about the future, and a high degree of reliance on forecasts. If you borrow a hundred dollars and invest in a project, you still owe a hundred dollars even if you fail in the project (but you do a lot better in the event you succeed). So debt is dangerous if you have some overconfidence about the future and are Black Swan blind, which we all tend to be. And forecasting is harmful since people (especially governments) *borrow* in response to a forecast (or use the forecast as a cognitive excuse to borrow). My Scandal of Prediction (i.e., bogus predictions that seem to be there to satisfy psychological needs) is compounded by the Scandal of Debt: borrowing makes you more vulnerable to forecast errors.

Big is Ugly—and Fragile

Second, *Mother Nature does not like anything too big*. The largest land animal is the elephant, and there is a reason for that. If I went on a rampage and shot an elephant, I might be put in jail, and get yelled at by my mother, but I would hardly disturb the ecology of Mother Nature. On the other hand, my point about banks in Chapter 14—that if you shot a large bank, I would "shiver at the consequences" and that "if one falls, they all fall"—was subsequently illustrated by events: one bank failure, that of Lehman Brothers, in September 2008, brought down the entire edifice. Mother Nature does not limit the interactions between entities; it just limits the size of its units. (Hence my idea is not to stop globalization and ban the Internet; as we will see, much more stability would be achieved by stopping governments from helping companies when they become large and by giving back advantages to the small guy.)

But there is another reason for man-made structures not to get too large. The notion of "economies of scale"—that companies save money when they become large, hence more efficient—is often, apparently behind company expansions and mergers. It is prevalent in the collective consciousness without evidence for it; in fact, the evidence would suggest the opposite. Yet, for obvious reasons, people keep doing these mergers—they are not good for companies, they are good for Wall Street bonuses; a company getting larger is good for the CEO. Well, I realized that as they become larger, companies appear to be more "efficient," but they are also much more vulnerable to outside contingencies, those contingencies com-

monly known as "Black Swans" after a book of that name. All that under the illusion of more stability. Add the fact that when companies are large, they need to optimize so as to satisfy Wall Street analysts. Wall Street analysts (MBA types) will pressure companies to sell the extra kidney and ditch insurance to raise their "earnings per share" and "improve their bottom line"—hence eventually contributing to their bankruptcy.

Charles Tapiero and I have shown mathematically that a certain class of unforeseen errors and random shocks hurts large organisms vastly more than smaller ones. In another paper, we computed the costs to society of such size; don't forget that companies, when they fall, cost us.

The problem with governments is that they will tend to support these fragile organisms "because they are large employers" and because they have lobbyists, the kind of phony but visible advertised contributions so decried by Bastiat. Large companies get government support and become progressively larger and more fragile, and, in a way, run government, another prophetic view of Karl Marx and Friedrich Engels. Hairdressers and small businesses on the other hand, fail without anyone caring about them; they need to be efficient and to obey the laws of nature.

Climate Change and "Too Big" Polluters

I have been asked frequently on how to deal with climate change in connection with the Black Swan idea and my work on decision making under opacity. The position I suggest should be based both on ignorance and on deference to the wisdom of Mother Nature, since it is older than us, hence wiser than us, and has been proven much smarter than scientists. We do not understand enough about Mother Nature to mess with her—and I do not trust the models used to forecast climate change. Simply, we are facing nonlinearities and magnifications of errors coming from the so-called butterfly effects we saw in Chapter 11, actually discovered by Lorenz using weather-forecasting models. Small changes in input, coming from measurement error, can lead to massively divergent projections—and that generously assumes that we have the right equations.

We have polluted for years, causing much damage to the environment, while the scientists currently making these complicated forecasting models were not sticking their necks out and trying to stop us from building these risks (they resemble those "risk experts" in the economic domain who fight the previous war)—these are the scientists now trying to impose the solutions on us. But the skepticism about models that I propose does not

lead to the conclusions endorsed by anti-environmentalists and pro-market fundamentalists. Quite the contrary: we need to be hyper-conservationists ecologically, since we do not know what we are harming *with* now. That's the sound policy under conditions of ignorance and epistemic opacity. To those who say "We have no proof that we are harming nature," a sound response is "We have no proof that we are not harming nature, either"; the burden of the proof is not on the ecological conservationist, but on someone disrupting an old system. Furthermore we should not "try to correct" the harm done, as we may be creating another problem we do not know much about currently.

One practical solution I have come up with, based on the nonlinearities in the damage (under the assumption that harm increases disproportionately with the quantities released), and using the same mathematical reasoning that led to my opposing the "too big" concept, is to spread the damage across pollutants—should we need to pollute, of course. Let us carry on a thought experiment.

Case 1: You give the patient a dose of cyanide, hemlock, or some poisonous substance, assuming they are equally harmful—and assuming, for the case of this experiment, the absence of super-additivity (that is, no synergetic effects).

Case 2: You give the patient a tenth of a dose of each of ten such substances, for the same total amount of poison.

Clearly we can see that Case 2, by spreading the poison ingested across substances, is at the worst equally harmful (if all the poisonous substances act in the same way), and at the best close to harmless to the patient.

Species Density

Mother Nature does not like too much connectivity and globalization—(biological, cultural, or economic). One of the privileges I got as a result of the book was meeting Nathan Myrrhvold, the type of person I wish were cloned so I could have one copy here in New York, one in Europe, and one in Lebanon. I started meeting with him regularly; every single meeting has led to a big idea, or the rediscovery of my own ideas through the brain of a more intelligent person—he could easily claim co-authorship of my next book. The problem is that, unlike Spyros and those very few others, he does not have his conversations while walking (though I met him in excellent restaurants).

Myrrhvold enlightened me about an additional way to interpret and

prove how globalization takes us into Extremistan: the notion of species density. Simply, larger environments are more scalable than smaller ones—allowing the biggest to get even bigger, at the expense of the smallest, through the mechanism of preferential attachment we saw in Chapter 14. We have evidence that small islands have many more species per square meter than larger ones, and, of course, than continents. As we travel more on this planet, epidemics will be more acute—we will have a germ population dominated by a few numbers, and the successful killer will spread vastly more effectively. Cultural life will be dominated by fewer persons: we have fewer books per reader in English than in Italian (this includes bad books). Companies will be more uneven in size. And fads will be more acute. So will runs on the banks, of course.

Once again, I am not saying that we need to stop globalization and prevent travel. We just need to be aware of the side effects, the tradeoffs—and few people are. I see the risks of a very strange acute virus spreading throughout the planet.

The Other Types of Redundancy

The other categories of redundancy, more complicated and subtle, explain how elements of nature exploit positive Black Swans (and have an additional toolkit for surviving negative ones). I will discuss this very briefly here, as it is mostly behind my next work on the exploitation of Black Swans, through *tinkering* or the domestication of uncertainty.

Functional redundancy, studied by biologists, is as follows: Unlike organ redundancy—the availability of spare parts, where the same function can be performed by identical elements—very often the same function can be performed by two different structures. Sometimes the term *degeneracy* is used (by Gerald Edelman and Joseph Gally).

There is another redundancy: when an organ can be employed to perform a certain function that is not its current central one. My friend Peter Bevelin links this idea to the "spandrels of San Marco," after an essay by Steven Jay Gould. There, the necessary space between arches in the Venetian cathedral of San Marco has led to art that is now central to our aesthetic experience while visiting the place. In what is now called the *spandrel effect,* an auxiliary offshoot of a certain adaptation leads to a new function. I can also see the adaptation as having a dormant potential function that could wake up in the right environment.

The best way to illustrate such redundancy is with an aspect of the life

story of the colorful philosopher of science Paul Feyerabend. Feyerabend was permanently impotent from a war injury, yet he married four times, and was a womanizer to the point of leaving a trail of devastated boyfriends and husbands whose partners he snatched, and an equally long one of broken hearts, including those of many of his students (in his day, certain privileges were allowed to professors, particularly flamboyant professors of philosophy). This was a particular achievement given his impotence. So there were other parts of the body that came to satisfy whatever it was that made women attached to him.

Mother Nature initially created the mouth to eat, perhaps to breathe, perhaps for some other function linked to the existence of the tongue. Then new functions emerged that were most probably not part of the initial plan. Some people use the mouth and tongue to kiss, or to do something more involved to which Feyerabend allegedly had recourse.

Over the past three years I became obsessed with the notion that, under epistemic limitations—some opacity concerning the future—progress (and survival) cannot take place without one of these types of redundancy. You don't know today what may be needed tomorrow. This conflicts very sharply with the notion of teleological design we all got from reading Aristotle, which has shaped medieval Arabic-western thought. For Aristotle, an object had a clear purpose set by its designer. An eye was there to see, a nose to smell. This is a rationalistic argument, another manifestation of what I call Platonicity. Yet anything that has a secondary use, and one you did not pay for, will present an extra opportunity should a heretofore unknown application emerge or a new environment appear. The organism with the largest number of secondary uses is the one that will gain the most from environmental randomness and epistemic opacity!

Take aspirin. Forty years ago, aspirin's raison d'être was its antipyretic (fever-reducing) effect. Later it was used for its analgesic (pain-reducing) effect. It has also been used for its anti-inflammatory properties. It is now used mostly as a blood thinner to avoid second (or first) heart attacks. The same thing applies to almost all drugs—many are used for secondary and tertiary properties.

I have just glanced at the desk in my business, nonliterary office (I separate the functional from the aesthetic). A laptop computer is propped up on a book, as I like to have some incline. The book is a French biography of the fiery Lou Andreas Salomé (Nietzsche's and Freud's friend) that I can very safely say I will never read; it was selected for its optimal thickness

for the task. This makes me reflect on the foolishness of thinking that books are there to be read and could be replaced by electronic files. Think of the spate of functional redundancies provided by books. You cannot impress your neighbors with electronic files. You cannot prop up your ego with electronic files. Objects seem to have invisible but significant auxiliary functions that we are not aware of consciously, but that allow them to thrive—and on occasion, as with decorator books, the auxiliary function becomes the principal one.

So when you have a lot of functional redundancies, randomness helps on balance, but under one condition—that you can benefit from the randomness more than you can be hurt by it (an argument I call more technically *convexity to uncertainty*). This is certainly the case with many engineering applications, in which tools emerge from other tools.

Also, I am currently absorbed in the study of the history of medicine, which struggled under this Aristotelian illusion of purpose, with Galen's rationalistic methods that killed so many people while physicians thought they were curing them. Our psychology conspires: people like to go to a precise destination, rather than face some degree of uncertainty, even if beneficial. And research itself, the way it is designed and funded, seems to be teleological, aiming for precise results rather than looking for maximal exposures to forking avenues.

I have given more complicated names to this idea, in addition to *convexity,* like *optionality*—since you have the option of taking the freebie from randomness—but this is still work in progress for me. The progress coming from the second type of randomness is what I call *tinkering,* or *bricolage,* the subject of my next book.

Distinctions Without a Difference, Differences Without a Distinction

Another benefit of duplication. I have, throughout this book, focused on the absence of practical distinctions between the various notions of luck, uncertainty, randomness, incompleteness of information, and fortuitous occurrences using the simple criterion of predictability, which makes them all functionally equal. Probability can be degrees of belief, what one uses to make a bet, or something more physical associated with true randomness (called "ontic," on which later). To paraphrase Gerd Gigerenzer, a "50 percent chance of rain tomorrow" in London might mean that it will rain half the day, while in Germany it will mean that half the experts think

it will rain, and (I am adding), in Brooklyn, that the betting market at the bar is such that one would pay 50 cents to get a dollar if it rains.

For scientists, the treatment is the same. We use the same equation to describe a probability distribution, regardless of whether the probability is a degree of belief or something designed by Zeus, who, we believe, calls the shots. For us probabilists (persons who work with probability in a scientific context), the probability of an event, however it may be defined, is, simply, a weight between 0 and 1, called the measure of the set concerned. Giving different names and symbols would be distracting and would prevent the transfer of analytical results from one domain to another.

For a philosopher, it is altogether another matter. I had two lunches with the (analytical) philosopher Paul Boghossian, three years apart, one upon the completion of the first edition of *The Black Swan,* the second upon the completion of this essay. During the first conversation he said that, from a philosophical point of view, it is a mistake to conflate probability as a measure of someone's rational degree of belief with probability as a property of events in the world. To me, this implied that we should not use the same mathematical language, say, the same symbol, *p,* and write down the same equation for the different types of probabilities. I spent three years wondering if he was right or wrong, whether this was a *good redundancy*. Then I had lunch with him again, though in a better (and even more friendly) restaurant.

He alerted me to a phrase philosophers use: "distinction without a difference." Then I realized the following: that there are distinctions philosophers use that make sense philosophically, but do not seem to make sense in practice, but that may be necessary if you go deeper into the idea, and may make sense in practice under a change of environment.

For consider the opposite: differences without a distinction. They can be brutally misleading. People use the same term, *measuring,* for measuring a table using a ruler, and for measuring risk—when the second is a forecast, or something of the sort. And the word *measuring* conveys an illusion of knowledge that can be severely distorting: we will see that we are psychologically very vulnerable to terms used and how things are framed. So if we used *measuring* for the table, and *forecasting* for risk, we would have fewer turkeys blowing up from Black Swans.

Mixing vocabulary has been very common in history. Let me take the idea of chance again. At some point in history the same Latin word, *felix* (from *felicitas*) was used to designate both someone lucky and someone happy. (The conflation of happiness and luck was explainable in an an-

tique context: the goddess Felicitas represented both.) The English word *luck* comes from the Germanic *Glück,* happiness. An ancient would have seen the distinction between the two concepts as a waste, since all lucky people seem happy (not thinking that one could be happy without being lucky). But in a modern context we need to extricate luck from happiness—utility from probability—in order to perform any psychological analysis of decision making. (True, it is hard to disentangle the two from observing people making decisions in a probabilistic environment. People may be so fearful of bad things that may happen to them that they tend to overpay for insurance, which in turn may make us mistakenly think that they believe the adverse event has a high probability.) So we can see now that the absence of such precision made the language of the ancients quite confusing to us; but to the ancients, the distinction would have been a redundancy.

A SOCIETY ROBUST TO ERROR

I will only very briefly discuss the crisis of 2008 (which took place after the publication of the book, and which was a lot of things, but *not* a Black Swan, only the result of fragility in systems built upon ignorance—and denial—of the notion of Black Swan events. You know with near certainty that a plane flown by an incompetent pilot will eventually crash).

Why briefly? *Primo,* this is not an economics book, but a book on the incompleteness of knowledge and the effects of high-impact uncertainty—it just so happens that economists are the most Black-Swan-blind species on the planet. *Secundo,* I prefer to talk about events *before* they take place, not *after.* But the general public confuses the prospective with the retrospective. The very same journalists, economists, and political experts who did not see the crisis coming provided abundant ex-post analyses about its inevitability. The other reason, the real one, is that the crisis of 2008 was not intellectually interesting enough to me—there is nothing in the developments that had not happened before, at a smaller scale (for example, banks losing in 1982 every penny they ever made). It was merely a financial opportunity for me, as I will discuss further down. Really, I reread my book and saw nothing to add to the text, nothing we had not already encountered at some point in history, like the earlier debacles, nothing I had learned from. Alas, nothing.

The corollary is obvious: since there is nothing new about the crisis of 2008, we will not learn from it and we will make the same mistake in the

future. And the evidence is there at the time of writing: the IMF continues to issue forecasts (not realizing that previous ones did not work and that the poor suckers relying on them are—once again—going to get in trouble); economics professors still use the Gaussian; the current administration is populated with those who are bringing model error into industrial proportion, making us rely on models even more than ever before.*

But the crisis provides an illustration for the need for robustness, worth discussing here.

Over the past twenty-five hundred years of recorded ideas, only fools and Platonists (or, worse, the species called central bankers) have believed in engineered utopias. We will see in ~~Section X~~ that the idea is not to correct mistakes and eliminate randomness from social and economic life through monetary policy, subsidies, and so on. *The idea is simply to let human mistakes and miscalculations remain confined,* and to prevent their spreading through the system, as Mother Nature does. Reducing volatility and ordinary randomness increases exposure to Black Swans—it creates an artificial quiet.

My dream is to have a true Epistemocracy—that is, a society robust to expert errors, forecasting errors, and hubris, one that can be resistant to the incompetence of politicians, regulators, economists, central bankers, bankers, policy wonks, and epidemiologists. We cannot make economists more scientific; we cannot make humans more rational (whatever that means); we cannot make fads disappear. The solution is somewhat simple, once we isolate harmful errors, as we will see with the Fourth Quadrant.

So I am currently torn between (a) my desire to spend time mulling my ideas in European cafés and in the tranquility of my study, or looking for someone who can have a conversation while walking slowly in a nice urban setting, and (b) the feeling of obligation to engage in activism to robustify society, by talking to uninteresting people and being immersed in the cacophony of the unaesthetic journalistic and media world, going to Washington to watch phonies in suits walking around the streets, having to defend my ideas while making an effort to be smooth and hide my disrespect. This proved to be very disruptive to my intellectual life. But there

* Clearly the entire economics establishment, with about a million people on the planet involved in some aspect of economic analysis, planning, risk management, and forecasting, turned out to be turkeys owing to the simple mistake of not understanding the structure of Extremistan, complex systems, and hidden risks, while relying on idiotic risk measures and forecasts—all this in spite of past experience, as these things have never worked before.

are tricks. One useful trick, I discovered, is to avoid listening to the question of the interviewer, and answer with whatever I have been thinking about recently. Remarkably, neither the interviewers nor the public notices the absence of correlation between question and answer.

I was once selected to be one of a group of a hundred who went to Washington to spend two days discussing how to solve the problems of the crisis that started in 2008. Almost all the biggies were included. After an hour of meeting, and during a speech by the prime minister of Australia, I walked out of the room because my pain became intolerable. My back would start hurting upon looking at the faces of these people. The center of the problem is that none of them knew the center of the problem.

This makes me convinced that there is a unique solution for the world, to be designed along very simple lines of robustness to Black Swans—it will explode otherwise.

So now I am disengaged. I am back in my library. I am not even experiencing any frustration, I don't even care about how forecasters can blow up society, and I am not even capable of being annoyed by fools of randomness (to the contrary), perhaps thanks to another discovery linked to a particular application of the study of complex systems, Extremistan, and that science of long walks.