BLACK SWANS AND THE COUNTER-TURKEY PRINCIPLE

Now let me explain why the focus on fragility —and antifragility.

The points I want to make next. a) Dealing with the Black Swan, to complete what was presented in the prologue, is not about predicting events but about mitigation of fragility and exploitation of antifragilities. As a matter of fact it is *exactly the opposite,* learning to think in nonpredictive terms and use nonpredictive methods. b) You do not want to change the world (leave it to the Soviet-Harvard utopianists and other philosophasters), you just want to make things more robust to defects and forecast errors, or even exploit these errors, making lemonade out of the lemons. Likewise, you do not want to rely on the elimination of greed and other human defects (this is a great sucker problem; humanity has tried to do so for thousand of years and humans remain the same, so the last thing we need is even more dangerous and boring moralizers, lacking in charm), rather the more intelligent action is to make the world greed-proof, or, even, hopefully benefit from the greed and other defects of the human race. c) Determining and mitigating fragility is easier, much easier, much much easier, than prediction and understanding the dynamics of events. And the entire mission reduces to present the central principle of what to do to minimize harm (and maximize gain) from forecasting errors, that is, have things that don't fall apart when we make a mistake.

Let me say it upfront: I believe that a certain class of predictors (whether economic forecasters, those working on population growth, price of wheat, and similar items, particularly those working for the august Office of Management and Budget of the United States have the level of scientific respectability of fortune tellers: they are charlatans, charlatans, charlatan, of the worst kind as they dress in the garb of science hence are more harmful than Ms Bré palm reader and fortune teller in the Lower East Side of New York City. And Ms Bré charge less money for her services). The reason they keep predicting is, simply because they get the upside and their harm is borne by others, as there is this modernist lack of accountability.

Predictors and builders of predictive systems, in this book, who cause harm to others by designing their pseudomodels, as well as others who fragilize society will be called *fragilistas*.

And these fragilistas are harmful: giving someone a model (or a numerical measure) patently invites him to take more, a lot more, risks.

As we saw in the description of Black Swan events, these large unpredictable shocks play a large role in some things —though not others. Manmade complex systems tend to develop cascades and runaway chains of reactions that decrease, even eliminate, predictability and cause outsized events.

This is obvious to any cab driver with a clear mind: he can see clearly that we can put a man, a family, a village on the Moon, and predict the trajectory of planets, or the most minute effect in quantum physics —but governments with equally sophisticated models cannot predict revolutions, crises and budget deficits, or climate change. Social, economic, and cultural life lie in the Black Swan domain, physical life much less so.

Further, an annoying aspect of the Black Swan problem is that the rarer the event, the less tractable and the less we know about how frequent its occurrence —yet the rarer the event, the more confident these "scientists" involved in predicting, modeling, and using PowerPoint in conferences with equations in multi-color background have a tendency to go about it[xvii].

So, to me it is by separating domains into which ones are dominated by these rare events (which are unpredictable), and which ones are not so. So there are two domains, Mediocristan and Extremistan, one in which extreme events matter little, the other completely dominated by them. If you add the calories you consume in a year, even without adjusting for your lies, not a single day will represent much of the total (say more than .5% of the total, five thousand calories when you may consume eight hundred thousand in a year). But if you take the sale of novels, more than half of sales (and perhaps ninety percent of profits) tends to come from the top .1%, so the exception, the one-in-a-thousand event is dominant. And randomness in Extremistan is intractable, intractable, intractable and I get angry with some pretentious fart who claims otherwise: I proved in a series of papers that rare events are refractory to computation and forecast, no matter what they tell you —they works on their computers doesn't work in practice. This invalidates much of what they say —something in the world

of quantitative social science nerdy farts is so rotten, so fake, and I prefer not to get started so early in the book.

So there is a Black Swan domain, in which reigns a combination of both intractable randomness and severe consequences from exposure to such random outcomes. I called the Fourth Quadrant this zone of both high vulnerability and high unpredictability, the one to avoid at all costs, and the one that is avoidable. Very avoidable*.

Let me rephrase. Risks in the Fourth Quadrant are both nonmeasurable and deceitful (since they come in lulling and comforting calm waters followed by mega-storms) so one needs to get out of the way rather than play scientist. In it what is nonmeasurable and nonpredictable will remain nonmeasurable and nonpredictable, no matter how many PhDs with Russian and Indian names you put on it —or perhaps these contribute to make them even more unpredictable. Even French and PhDs won't do (but please don't start a conversation with one of them about the subject). There is, in this zone, which we called the Fourth Quadrant, this limit to knowledge that could never been reached, no matter how sophisticated statistical and risk management science ever got.

My involvement has not been so much in asserting this impossibility to ever know anything about these matters —this problem has been raised throughout history by a long tradition of philosophers, including Sextus Empiricus, Algazel, Hume, and many more skeptics and skeptical empiricists, which I merely formalized and modernized. My work is about, in fact, saying where we do not have to waste energy by being skeptical, in a) figuring out exposures to Black Swans, defining the Black Swan effect and determine the boundaries of its domain, namely the Fourth Quadrant, the area beyond which your "scientific" skills no longer work (which means also saying about the area outside of it "this is where these techniques work

* What are the Quadrants? Combining exposures and types of randomness. Mediocristan randomness, low exposure to extreme events (First Quadrant); Mediocristan randomness, high exposure to extreme events (Second Quadrant); Extremistan randomness, low exposure to extreme events (Third Quadrant); Extremistan randomness, high exposure to extreme events (Fourth Quadrant). The first three quadrants are ones in which knowledge or lack of it are inconsequential. "Robustification" is the modification of exposures to make a switch from the fourth to the third quadrant.

just fine, so go hire PhDs with unpronounceable names"), and b) produce a mechanism for decision-making that would not suffer from these errors.

In other words, my approach is simply: "how not to be a turkey".

What is a turkey? At the center of *The Black Swan*, a turkey is fed for a thousand days by a butcher; every day confirms to his staff that butchers love turkeys "with increased statistical confidence". Until a few days before thanksgivings when it is not a good idea to be a turkey. So the turkey will have a revision of belief —when it confidence is maximal. It is a Black Swan event (for the turkey, not for the butcher).

So if I am a skeptic, my work is the opposite of systematic, radical, and indiscriminate doubt —rather what I've done is reduce the fields of skepticism, determine areas in which we can (and should) reduce skepticism since gullibility and beliefs cause no consequential —and dangerous, turkey-style —errors. So I'd rather exercise my skepticism on the methods used to determine the risks of a nuclear reactor or economic collapse rather than on whether the sun would rise tomorrow.

Now for reasons that have to do with the increase of the artificial, the move away from historical and natural models, and the loss in robustness owing to complications in the design of everything, the role of Black Swans in increasing. We are victims to a new disease, called *neomania*, that makes us build Black Swan vulnerable systems —under the illusion that we are undergoing "progress".

But it took about several million copies, a crisis, a dozen of articles in scientific journals (by this author), several hundred more (by others), several thousand pieces of hate mail, six smear campaigns (mostly by "quants"), and a revamped second edition of *The Black Swan* for the message to go through without distortion —no, we don't need to spend time predicting Black Swans with even more complicated models coming from the nerdy farts of chaos-complexity-catastrophe-fractal theory. The answer is simpler: *less is more*; move the discourse to fragility (in other words focus on getting out of the *f**** Fourth Quadrant). Moving the discourse from Black Swans to fragility implies abandoning the predictive and focusing on what we know.

As I said, much, much, much, easier.

I can't predict if and when an event can take place, but I can pretty much describe, with some accuracy, how it would affect me should it take place, or change my exposure in order to be able to describe how it would affect me.

Clearly we still have to figure out *which* even *can* take place, without of course assigning probabilities, but we don't have to make detailed forecasts or understand probabilities—we don't need the same precision. Given that we know what is fragile to Black Swans, and to model error, the solution is of course to build a world that is robust to these, something mother nature has done admirably —a nonpredictive world. And, talking about mother nature, let us learn her methods, spirits, if we can, and give respect to what it has produced. The notion of fragility is itself *not fragile* to error.

The corollary, of course, is that:

Anything designed in a way to rely *on prediction will eventually break, given that predictions have errors. The more dependent on prediction and the higher the error in the prediction, the more you can expect it to be fragile.*

So instead of making theories of the world, the task is to build a map of exposures, what is fragile and what is robust, something very practical and easy to do. (This is what is called "real world solution", though only academics or non-real world operators use the expression "real world solution" instead of, simply, "solution".)

I used the word "robust". Then I realized that, well, mother nature was not just "safe". It is aggressive in destroying and replacing, in selecting and reshuffling. When it comes to Black Swan Events, "robust" might not be enough. In the long run everything with the most minute vulnerability breaks given the ruthlessness of time —yet our planet has been around for perhaps four billion years and, convincingly, robustness can't just be it: you need perfect robustness for a crack not to show up and crash the system. Given the absence of perfect robustness — we need layers of

antifragilities, in other words, a mechanism by which the system regenerates itself continuously by using, rather than suffering from, Black Swans and volatility.

Finally, prediction is harmful as it causes people to take more risks and turn them into suckers, let us build systems that are nonpredictive. Hence everything can be glued together into the central principle of what to do under unpredictability, which I call the *turkey principle*:

> *Minimum reliance and dependence on prediction error as a guiding principle, avoidance of being a turkey.*

The antifragile gains from prediction errors, in the long run.

Now, just as simple; the new task is to build a map of what is fragile and what is robust, and what is antifragile.

Conflation of event and exposure

This error I've encountered with the treatment of the Black Swan problem is vastly broader. We can generalize and give it the name error of "conflation of event and exposure", an error made way too often by people who should know better, especially philosophers of science, even scientists —it was not until 1964 that we had a serious study of the difference between the properties of the two. Nobody thought about them before as worth dealing with. For instance the predictor's reaction is "we need better computation (preferably taxpayer funded as we will see in Chapter x)" instead of "modify your exposure".

In spite of the bad press, some people in the nuclear industry seems to be the rare ones to have gotten the point (now strengthened by the foolishness of the setup of Fukushima and the incompetence of their risk managers), so instead of predicting failure, they are aware that they should instead focus on *exposure to failure* —making failure irrelevant. It implies building small enough reactors and embedding them deep enough in the ground with enough layers of protection around them that a failure would not affect us much —costly, but still better than nothing[xviii]. Another

illustration is the Swedish government's focus on fiscal responsibility —it makes them much less dependent on economic circumstances —and need fewer economists of the forecasting variety*.

Now, beyond the Black Swan problem, the error of conflating events and exposure is at the heart of the translation between theory and practice, and, we will see in the next chapter, epistemology and decision-theory. Understanding the nature of the event itself, or the nature of things is important, but do not confuse it with understanding how the event matters to me. But things can get even worse. Some people understand the difference explicitly then go on confusing the two. I have bones with the inconsistency of philosophers and scientists mistaking *knowledge* and *action*, an elementary mistake if you point it out to them, but one that they make nevertheless when immersed in their arguments.

* *Technical note on the conflation event and exposure* (the motivated reader should skip, this is a rewording of material discussed in English here and rephrased at length in Chapter x). This conflation of event and exposure is what I call the confusion between X and F(X), also expressed in Chapter x as the *Aristotelian v/s the Thalesian*. The error consists on focusing on a variable, say X when we should be dealing with a function of that variable F(X) (here, the effect of X on you, the exposure to X). We may never understand X, or be marred with perceptual errors, but we can control F(X). The fool thinks the Black Swan problem resides in better prediction of X, rather than the much simpler problem of mitigation by controlling F(X). Sometimes scholars make the distinction then go on conflating the two. Focusing on F(X) is not predictive, focusing on X is necessarily so. And the connection to antifragility is as follows: F(X) can be antifragile.