

Program Information:

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many of us

interpret it that way. The last speaker was Paul Saffo who is here tonight. Paul talked about techniques of forecasting, especially in technology and sort of in the decade range of time. In a sense, he is looking at the future in a micro scale. In context of the Long Now Foundation where we like to think of the last 10,000 years and the next 10,000 years, decades are pretty quick. In that period of time, large events have a way of happening and so the speaker tonight is talking about the macro scale and macro events. Please welcome Nassim Taleb.

(Applause)

NASSIM TALEB: So my talk is not definitely going to be about the future. I know nothing about the future. First of all, let me show you a picture of the book. The American Statistical Association has a special session on The Black Swan and that $\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\in\tilde{A}^{\uparrow}\tilde{A}\phi\hat{a}$ what they are going to do with my book.

(Laughter). In

August, in Colorado, I have to show up to be yelled at. (Laughter). The Black Swan, what is The Black Swan? First of all, it is not this wine. Let me explain to that people, as part of our, like, inability to think, to do second order thinking, most people buy me this wine not thinking that other people are aware of The Black Swan wine and the fact that I write The Black Swan. So please, if I ever invite you to dinner or something, please, for Christmas, I just had an e-mail today from students at Harvard. They want to piss off the professors by inviting me, of course. And they say weÃf¢â€šÂ¬Ã¢â€žÂ¢re going to

have a

reception and they mentioned this wine. Okay, so it is not ââ'¬Ã¢â,¬Å" it is undrinkable. (Laughter). So whatâÀšÂ¬Ã¢â€žÂ¢s a

Black Swan, no, no, honestly, and particularly, the red wine.

What is a Black Swan? Before the discovery of Australia, we had no reasons to believe that Swans could be of any other color but white or people in the old world. And effectively, there was an expression in medieval England, you would sooner see a black Swan than say, for example, it was like saying when pigs fly or when, I donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t know, when George Bush does something intelligent

or

something. (Laughter). It also means the exception. So there was an expression. Until we saw Australia and effectively, one Ãf¢Â¢â€šÂ¬Ã¢â,¬Å" the sighting of a single bird destroyed millennia of confirmation. So it

was posts as a logical problem by showing that there is no reason. You cannot rule out Black Swan because you havenÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t seen any. So my problem is not a logical question. My Black Swan is an event.



It is not a bird. So it is an event that has three properties.

The first property, it is hard to predict. Very difficult to predict based on information - am I standing on the right spot? Okay - based on information before its occurrence, prior information, based on historical information. You have here a sample of Black Swans. The most interesting one is the tie. Someone who is going to forecast the future would have to forecast that human beings, 2000 years away would constrict their blood supply with this device, for example. Okay and attend meetings. Okay, so that $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\tilde{S}\hat{A}\neg\tilde{A}\phi\hat{a}\in\tilde{Z}\hat{A}\phi$ s pretty difficult to predict. The computer was a Black Swan. It changed the

world. And

nobody thought the computer could do anything. You know, it was initially used for combinatorics. I mean, Watson from IBM did not think that this tool could have any use. The rise of religions Black Swans (indiscernible)[00:05:23] predictable. Harry Potter is a Black Swan, lot of cultural phenomenon are Black Swans.

To me, the most significant Black Swan and the one lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m going to focus next in a few minutes the first

war. The first war we had after Napoleon we thought for about a hundred years that the world became civilized and that, you know, people became conscious of the need for peace and you this devastating war, the biggest war. Something that destroyed and of course it came in two volumes. You had WW I and then it had a sequel. So, here we have Black Swans events of low predictability, high consequence. But the most vicious part is the following one. Is that before the fact they're extremely predictable. But after the fact $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{s}\hat{A}\neg\hat{A}...\hat{a}\in$ œyou know what? We saw them coming. $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{s}\hat{A}\neg$ So, we have this is what I call the retrospective distortion. If these events are prospectively unpredictable, retrospectively predictable. Why? We even have disciplines to make us, to give the illusion of understanding the world. You see have disciplines that make us misunderstand the world by giving this illusion of predictability. History for example, economics, other such things, astrology, okay. So, we have mechanism buy which we, sort of like, have this illusion of understanding the world. The first one is what I call silent evidence. Before people think that the first war was predictable. Particularly, if you, I don $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{s}\hat{A}\neg\tilde{A}\phi\hat{a}\in\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\in\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\in\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}\otimes\hat{s}\hat{A}\phi\hat{a}$

discussed

the first war. It appears to result from tension between the UK on one hand, Austria and Germany on the other, okay.

So, you think that thereÃf¢â€šÂ¬Ã¢â€žÂ¢s tension that led to war. If you see tension then you can predict war. But

youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re not looking at episodes of tension that did not lead to war. And there were a lot of episode of

tension before that did not lead to war. And there were a lot of episode of tension before that that did not lead to war. And these episodes usually led to parties in Baden Baden, you see, with opera singers, lot of champagne and they get drunk. All right, kings get drunk plus they knew each other. So they know how to do it. So, you have top realize that after the worry things tension calls this war. But if youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re in a champagne business you realize tension causes drunkenness by kings when

they make up.

Okay, so we have that problem.

So let me give you an illustration of this inability we have in looking at what I call the silent evidence, a pool of evidence that had not lead to the same result. The comment made this is recorded no

Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" even

better, a comment made by a publisher about the success of the Black Swan and he was explaining it



with as follows Ãf¢Ã¢â€šÂ¬Ã…"look it has an animal and a color on the cover, that explains the success.Ãf¢Â¢â€šÂ¬ (Laughter)

Okay, when I heard that. I said Ãf¢Ã¢â€šÂ¬Ã…"okay, I'm going to take care of this guy.Ãf¢Ã¢â€šÂ¬ I looked on Amazon for

how many book have animals and colors in their title and on the cover that ended up flopping, okay. And you have plenty of them. I found 69 books with a Black Swan in their titles. They were flops.

You donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t hear about them because theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re flops. We are not looking at the evidence. Plus, of course

we have permutation. Pink elephant, different colors different animals okay so plenty of books like that that flopped.

So, this is what I call the cemetery of evidence and for those of you interested in probability.

ltÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a big

probability problem because we compute probability based on those who survived. Probability is a survival not based on the pool of those who started. This is very endemic in a way we analyze the world the way we understand information, the way we perceived information, decision making under uncertainties completely dominated, okay, with this mistake of taking a pool of information and excluding the rest.

So, itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s what I call silent evidence. We have it on Wall Street , you look at the winners and say they

have skills and donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t look at people who have the same sets of skills who end up loosing because these

people donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t write biographies. They donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t say how I lost a million dollars. They tell how they made

the million dollars. (Laughter) So we have that. So, but the problems with historians. People on Wall Street you can understand that theyÃf¢Â€šÂ¬Ã¢â€žÂ¢re not that smart. But historians did not know that,

okay, or did not

deal with it empirically. Now I happen to have spent 18 years as a trader and I hated it, okay. But I stayed there because it was fun particularly because you had economists around and people who make forecast and could make fun of them. So, there are some advantages to it. But one thing I discovered is that the beauty, the power of economics is that we have plenty of data. When you have data you can do some real analysis on a data that $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{X}\hat{A}\gamma\hat{A}\phi\hat{a}\in\hat{Z}\hat{A}\phi$ s completely unbiased because the date is going to

be there and

you can throw numbers at the computer.

So, I looked at history to see if anybody did something like that. And I discovered that one of your future speakers, you know Fergusson, a brilliant man and I recommend if you ever want to have a fun lunch with someone to come up if you know, heÃf¢â€šÂ¬Ã¢â€žÂ¢s good lunch, all right. So, and he wrote a

paper

showing that although we believe that the first war was predictable. The bond market,

thereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s

something called war bonds in the UK and the UK bonds did not predict it. So, it cannot be that predictable if the bond marker $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a},\neg\hat{A}$ nobody told, you know the bond market. Okay. So, we have prediction markets and stuff. So we realized now if you dig in to history, how bad we are at predicting. How bad we are seeing things. How bad our predecessors were at predicting.

A mechanism of course is called over causation. I skipped this because it was too complicated. But also there is some psychological mechanism involved. Is that you make an actual prediction you have



the outcome and then, this is power point, all right, this is remembered prediction. Typically, you remember what you remember having predicted is more consistent with what you observed. So you donÃf¢Â€šÂ¬Ã¢â€žÂ¢t remember what your actually predicted. But you revise your memory of what you ally

actually

predicted continuously to make it consistent with current events. Not only you do that with your prediction, you also do that with your intentions. Plays a big problem in for us in adjusting because we would realize that if we didnÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t have this effect people would know that they're very bad at sting.

predicting,

the economics department would be empty or would commit suicide or something like that. You would have no social science to speak of, okay. People would turn cab drivers or something. So, you would realize but it is a psychological bias.

Now, let me talk about the Black Swan problem in history. Okay, in philosophy and going somewhere with this particularly with my next work. The first gentleman up there on the left. The one who is horizontally challenged his name is Hume okay. ItÃfÂ¢'¬Ã¢"Â¢s called a humerus problem but

itââ'¬Ã¢â€žÂ¢s not his

problem. Ità fŢŢ倚Ŭâ倞Å¢s because he wrote in English his great ideas write in English then it should be remembered like people who write in English that is it a humerus problem. Effectively, he took it from someone else. But Hume is worthy discussing because he was completely annoyed with the Black Swan problem completely annoyed with that problem of induction. It was not called Black Swan at the time, it was called the problem of generalizing from finding that sample or problem of induction. And what he did with it is very simple. He said, you know what I leave for the philosophical cabinet. And in real life I can't deal with it. He was a party animal and his reaction to the Black Swan problem is to become even more horizontal, you see which he gained a lot of weight and then he died and he had a happy life in Paris and Edinburg.

So, let forget about Hume because he could be of no help except also to illustrate one thing that happened in philosophy is that increasingly philosophers became what I call domain dependent. If they are good at talking about a problem in a classroom and then they forget about it when they leave the classroom. And it is the bias statisticians for example note to understands that this sets in real life. TheyÃf¢â€šÂ¬Ã¢â€žÂ¢re good in front of the blackboard. We know that from a lot of experiment. The I way I

discuss

it in the Black Swan is I talk about the domain of the dependence about the Reebok Club in New York where people go get in their gym clothes and then take the elevator to the stairmasters and the get on the stairmasters and log their 112th floor stories and the go and then stop and then take a log of it, okay? So, you have domain dependence people not recognizing something in the texture of real life. So, let's forget about this guy. Next one, there $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\tilde{A}\phi\hat{a}\in\hat{Z}\hat{A}\phi$ s a french guy but the French

donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know about him or at least

forgot about him, wanted to forget about him. He is a bishop called (indiscernible)[00:15:15] and he dealt with the Black Swan problem by becoming extremely religious. He, not liking science and of course we had the enlightenment became pro-science and with all the tragedies that we have coming from it. So he is forgotten. He became very religious.

The gentleman here is Al-Gazhali he was the Arabic language philosopher. The Arabs call him an Arab. The Persians call him a Persian. So he is a Arabic language philosopher, who attacked the classical philosophers by writing a treatise called The Incoherence of Philosophy. A very famous treatise and he created Sufi Islam out of the thing. So, it $\tilde{A}f\hat{A}\phi\tilde{A}\phi\tilde{a}\in\tilde{A}\gamma\tilde{A}\phi$ s the Black Swan problem led

these two



gentlemen to become extremely religious.

Now, the one on the right is my hero or you know I think we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t really know if he existed. What he

represents would make him my hero is Sextus Empiricus. He is not in philosophy books not very common philosophy books. He had two things. He was a skeptical gentleman who phrased that problem reduction just the way Hume later on repeated it. Second Century, AD and his second attribute he was a doctor. So there was a school of medicine of decision makers under uncertainty called the empirical doctors. Who were damn good doctors. They did not like theories, did not like to generalize, did not like to extend into unobservables. Okay, did not like to make a goal from what they know to what they don $\tilde{A}f\hat{A}\phi\tilde{A}\phi\tilde{a}\in\tilde{S}\hat{A}\neg\tilde{A}\phi\tilde{a}\in\tilde{Z}\hat{A}\phi$ t know. Extremely careful, they called themselves empiricists. They

did not

like to generalize and these people were extremely successful. Unfortunately, they were completely, you know, medicine became intellectual rationalists. They felt they understand the Human body. So these people were out of business for about 15 centuries before medicine came back via the (indiscernible)[00:17:21]. As you guys are alive today, its because these guys or their ideas of because (indiscernible)[00:17:30] not because of the contributions of intellectual doctors. Finally, there's is a gentleman I'm sure you recognize him particularly if you live in Berkeley, all right.

So this is Karl Marx. All right. So, Karl Marx had this idea of want Ã*f*¢Ã¢â€šÂ¬Ã¢â,¬Å" he wanted in his Theses

On

Feuerbach. He said that philosophy, you know, was just talk. Let's do something with it, unfortunately. His idea was to turn knowledge into action.

So, my idea is exact opposite. How to turn lack knowledge and lack of understanding into action? So. This is pretty much my talk and how not to be turkey. In the Black Swan this is my cousin. Who did the story of the turkey and the Black Swan? Turkey is fed for a thousand days. Every single confirms to the turkey. That butcher is extremely or the human in general is extremely interested in its welfare increasingly, until of course when the Black Swan happens. I'm interested in the story of the turkey one because itÃf¢â€ŝ¬Ã¢â€žÂ¢s the intro of the Black Swan story, you know and the consequences of

inferring from

observables. But the other one is that for the turkey itÃf¢â€šÂ¬Ã¢â€žÂ¢s a Black Swan. But for the butcher its not a

Black Swan, okay.

So, Black Swan depends on the set of knowledge you have. Now, if weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re going to have an earthquake

here. I mean you have to have contingencies, all right? If thereÃf¢Â€šÂ¬Ã¢â€žÂ¢s going to be an earthquake the

following slide will probably take care of, you know what I have to say, all right. So, make sure that you listen to next slide because it summarizes my position on the Black Swan. There are two provinces Mediocristan and Extremistan and by the way I thank Chris Anderson for suggesting the name Externeistan. I gave the manuscript. I had a nerdy name, all right. And he suggested something else and it was Extremistan I owe it to him, all right.

In Mediocristan the following properties halts. Let's play the following started an experiment.

LetÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s

say we gather a thousand people randomly from the planet. Okay and you bring him here and put them on a scale. Of course, made in California Scale extremely well-built, okay and make sure you have one Frenchman but not more, you know, because we have people standing next to him, all right. So you



have them on the scale and you weight them, all right. Then try yo imagine the heaviest human being you can think off who can still be called a human being. And add him or her to the scale. How much of the total would he represent? How much 0.3% half a percent I donÃf¢ã€šÂ¬Ã¢â€žÂ¢t know in California

but

typically in the north 0.3%. The heaviest human being on the planet would be nothing but

thatââ'¬Ã¢â€žÂ¢s from

the total.

So in Mediocristan the rule halts. When your sample is large exception can happen. But they're not going to be consequential too little. So this is a domain I call Mediocristan. That domain everything youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ve learned in statistics or almost youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ve learned in statistics

applies to Mediocristan and its called

the Law of what? Large numbers, okay that as your sample becomes large your (indiscernible)[00:21:29] are little. But also tells you can diversify your portfolio. It tells you why insurance companies somewhat survive, although, they donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t quite survive that well. Okay,

it tells you

a lot of things about Ã*f*¢Â¢â€šÂ¬Ã¢â,¬Å" But without this supreme law Mediocristan, you would not have statistics.

Now, this is a problem because if let's take the very same sample of a thousand people and your going to have People from Rwanda on your sample. The very same sample and try to think of the wealthiest person you can think of. Who can still be called a person. He is not far from here, I guess, no. All right, he can still be called a person but borderline, no. And add him to the sample, how much of the total he represents? Okay, it would be 100%. He worth $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{Z}\hat{A}\phi$ s what 60 billion dollars the ping 2

remaining 2

million dollars, all right. The supreme law of Extremistan tells you the following. Whenever you take a large sample a small number of observations in that domain will represent the big share of the total. So you have two domains. One that $\hat{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{A}^{\uparrow}\hat{A}\phi\hat{a}\in\hat{A}\phi\hat{a}$ dominated by the exception Extremistan and one

thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s

dominated by the general, by the mediocre, by the central, by a lot of people the collective. The collective dominates the other one okay. Very simple let's take a compare income dentist for example. WeÃfÂ ϕ â \in šÂ \neg Ã ϕ â \in žÂ ϕ re finding a dentist who makes more money than all the other dentists combined. But in the book business, what's her name the lady she sell a lot of books, all right. Okay, so the fact that you have what, you have 16,000 books published every year in the English language. All these 16,000 books some year 5-25 books represent half the sales. So, you have concentration in Extremistan. And weÃfÂ ϕ Â ϕ ã \in šÂ \neg Ã ϕ â \in žÂ ϕ re moving from Mediocristan to Extremistan. If your pain by the hour

youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re in

Mediocristan. You guys are the epicenter of Extremistan. Okay, you have Google and stuff like that. Some one who makes and sells sandwiches cannot become the guru over night. Okay, you cannot if you have the demand for 2 billion sandwiches. I don $\tilde{A}f\hat{A}\phi\hat{a}\in\tilde{A}^{\uparrow}A\phi\hat{a}\in\tilde{A}^{\uparrow}A\phi$ t what are you going to do to deliver 2

billion

sandwiches. But in the electronic in the information age you can deliver as usual, you know, put a zero on it, okay.

So, you have different properties in Extremistan. Social fairness is of course is more prevalent than Mediocristan than Extremistan. Of course you have more opportunities in Extremistan but the illusion of Extremistan. But you have a lot of unfairness because you have a winner take all effect in Extremistan. And the metaphor $\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\tilde{+}\tilde{A}\phi\hat{a}, \tilde{-}\tilde{A}$ " the story I used in the Black Swan is the of Jacomo an



Italian opera

singer and they a Pavarotti yet. Pavarotti is minus 75 years old, okay. you donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t have a way to store

your voice. The income of opera singers is not going to be massively skewed because if you find

yourself in some little town and youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re okay. All right. So, the guy from Milan isn't going to compete

with and then he discovered all these technologies. All right, that destroyed Jacomo and helped Pavarotti, okay. So, for example as a writer I'm in Extremistan because every time one of you buys my book. I donÃ*f*¢Ã¢â€šÂ¬Ã¢â€žÂ¢t have to go to my hotel room and write it again, right. But if I were making vieles

sandwiches Id have to do that.

The properties of Extremistan are quite nasty in the sense that, one observation can destroy the whole thing. One exception can destroy the whole thing. Economic life is from Extremistan the metrics we have are not adapted to Extremistan. So it takes the companies in the US you have what 12,000 listed companies between 100 and 200 companies represent half the capitalization. ThereÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢s this

rule of 80/20

ParetoÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s law. Its not 80/20 things in life are 0.05 and 99.95. And this is an illustration of Extremistan

versus Mediocristan. The inequalities this is on the left is Mediocristan and on the right is Extremistan.

Here in the middle is on its way to super Extremistan. You donÃ*f*¢Ã¢â€šÂ¬Ã¢â€žÂ¢t have that with height so there are two

kind of randomness. This is the two kinds of randomness and they're not I mean this is about the Ã*f*¢â€šÂ¬Ã¢â,¬Å"even

in California, you know, I can have someone say to walk in here 8 feet tall. You guys won't be surprised I would be surprised. But I can't see someone walking in here 2 billion feet tall. But with wealth with random variables I belong to shows there not the same animals, okay.

So, when someone says this is an approximation when either something called the gaussian curve, okay

itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a tool of extremist of Mediocristan most statistical name that you know belong to Mediocristan.

When they say their approximation, as much of an approximation, this plant, approximate a human, okay. There are large qualitative differences.

Now, let me turn on philosophers, I get pissed off whenever I hear the word uncertainty principle. As it if it had anything to do with uncertainty. For a lot of reasons 1.Quantum mechanics is from

Mediocristan, that $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{A}\gamma\hat{A}\phi\hat{a}\in\hat{A}\phi$ s the first one and second one, the uncertainty we have in physics. In that kind of

uncertainty in Quantum mechanics is the least uncertain of all uncertainties because they average out, you see, which is the reason why this table has not been here all this time. I have been talking for 20 minutes and this table did not move.

So, the problem to me uncertainty is when I here someone is I was trying to go to Lebanon and there was this war and there's absolutely no schedule, time table for the end of the war. Okay, there was when they killed Bhutto it was not scheduled, all right. So, the uncertainty we have is macro

uncertainty. ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s so monstrous that people waste their time talking about limits of knowledge here

when the limits of knowledge are not consequential. The limits on the right are consequential yet they don $\hat{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a}\in\hat{Z}\hat{A}\phi$ t think that these on the right have real limits. That $\hat{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a}\in\hat{Z}\hat{A}\phi$ s why I get



very angry.

Another thing I coined the word the Ludic fallacy to try to bring people not to equate uncertainty with what you see in games. As casino, Number 1. Because casino is from Mediocristan and the second one you donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know the probabilities of real life, you donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know, and the Casino is a sterilized probability.

Most of what weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ve learned took in a philosophy comes from this stupid thing. So, I called it Ludic

because I learned that once we use a Latin or Greek word for anything you can charge a lot more for it.

(Laughter) so I use Ludic. ThereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s another reason okay because gambles fallacy something else that

belongs to a former Berkeley professor (indiscernible)[00:29:19] but anyway, let me give you my

Polish joke. IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ve written two non-technical books and almost every other line, I go on a rant against

what I call, you know, the Ludic fallacy or manifestation of non-probabilities til I receive by mail a

copy of the Polish translation of my book. And thereà f¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a - (indiscernible)[00:29:49] have nothing to

do with games how I get angry when illustrators suggest a die to put die on Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" look what was it. So

thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s my Polish joke. ThatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s how it looks like. All right.

So my idea in the Black Swan is not like Hume to say, Ãf¢Ã¢â€šÂ¬Ã…"Okay, let me get horizontal. All right and

forget about, you know, leave my anxiety about the fallen veteran. This is my idea in the Black Swan itââ'¬Ã¢â€žÂ¢s just trying to get no to be the turkey in real life. Try yo get out of trouble. So I think the Mediocristan and Extremistan is a good start. You worry about the Black Swan in Extremistan because itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s consequential. So, already you know how to worry about the consequential

and people

keep telling me Ãf¢Ã¢â€šÂ¬Ã…"Oh you Taleb you know you worry too much.Ãf¢Ã¢â€šÂ¬ Will you cross the street? I tell them

yes my idea is unlike you, I donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t want to cross the street blind folded because it looks like we have a

psychological problem. We tend to be chicken when we know about the risks and overreact and most

risk taking in society and in this we can see through experiments are taken not because of

weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re

particularly courageous and have a lot of bravado and but know the odds. No, itÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢s because we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t

know the odds or we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know whatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s going on. We donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know whoÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s taking these risks. Think of

bankers okay. TheyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re the most incompetent probably profession in history because they have cut up

by the governments. But bankers, all right, take a lot of risks. They think theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re not taking risks. If

they knew the risks theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re taking theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢II change and become plumbers or something else, you see. So

they don $\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\in\tilde{S}\hat{A}\neg\tilde{A}\phi\hat{a}\in\tilde{Z}\hat{A}\phi$ t have the temperament. So a lot take risks because they are blind folded not because they are



conscious or they see what theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re doing.

This is classical in finance is that you see frequently the Ãf¢â€šÂ¬Ã…"Dear InvestorsÃf¢Â¢â€šÂ letter when someone does

well for about Ã*f*¢Ã¢â€šÂ¬Ã¢â,¬Å" and then every single metric in economics will give them low risk profile for 12 years.

All right. And sure enough, at the end, it has that, you know, that letter, it is usually, they send a letter, $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{A}\gamma\hat{A}\dots\hat{a}\in\hat{C}$ Dear Investor, surely these events as much as a surprise as they are to

you.Ãf¢Ã¢â€šÂ¬ (Laughter). And then

okay, but, you know, I saw letter sent by some folks in 1998 who had a sort of Nobel in Economics and I saw the one sent recently (indiscernible)[00:32:15] there was no linguistic evolution. (Laughter). biggest thinker of medieval Islam, and later on was taken by Espinoza who was esoteric, by seeing the The same thing, Ãf¢Ã¢â€šÂ¬Ã…"Dear Investors.Ãf¢Ã¢â€šÂ¬ So this is what IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ve been fighting is Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" this is a typical illustration of

the problem I want to try to avoid. This is what you see in finance or in anything where

youââ'¬Ã¢â€žÂ¢re going

to have Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" this is a performance. ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s got dominated variation on dominated by a Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" this is 20 years Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" by a

small number of alterations. (indiscernible)[00:32:39] have that yet people chitchat about small variations all the time.

I was talking to Ferguson and I got in my head that maybe I should start thinking about history so I went to the bookstores to look up the books of history, hysterography. We are thinking about doing some way of dealing this randomness and history by comparing Mediocristan to Extremistan. And if you are to do quantitative history like simplify history to simple stochastic process so it would be quantitative. On top, you would have a Mediocristan type history. At the bottom, you have an Extremistan type history where most $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a},\neg\hat{A}^{\mu}$ you don $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a}\in\hat{Z}\hat{A}\phi$ t have a lot of moves

but guess what? When you have

a move it is going to be abrupt. So most of the time nothing happens and then you have big jumps.

History jumps. It doesnÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t crawl. And that was the statement I made in the The Black Swan and against

everything that was the one in hysterography (indiscernible)[00:33:41] $\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\in\tilde{A}\neg\tilde{A}\phi\hat{a},\neg A$ " all that stuff. Next, let me talk about the experts. This is going to be in a subway in London. Okay. Ignore experts. Okay? Some experts not all experts. Not all experts, all right? Not the plumber, all right? Of course, you need the plumber, okay? (Laughter). Let me start with the Mathematicians, all right? And

lââ'¬Ã¢â€žÂ¢m

sure there are plenty of mathematicians here. Enough. So at least a few would be insulted. (Laughter). So I spent some time working with mathematicians of randomness and, of course, I made a funny discovery one day when a gentleman was giving a lecture of why mathematics were important in society and he was going $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi$ was explaining how traffic lights were often relies and so on and

so forth -

mathematics is great.

donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t do for you. ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s like



politicians. So we have a feeling that they are important. Of all the space of possible equation that we have, the one mathematicians can handle is minute so what they do is they want something they can prove Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" the number of things we can prove or your theorems is so small that mathematics is very Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å"

whatever can be mathematized will be suspicious. Now we were spoiled in Physics. They tell you,

Ãf¢Ã¢â€šÂ¬Ã…"Look, it works in Physics.Ãf¢Ã¢â€šÂ¬ We were spoiled in Physics. Although, you know, there are a lot of

things in Physics that has not been mathematized but how about medicine? How about economics? How about all these other fields? Okay. They give you Ãf¢Ã€â€šÂ¬Ã¢â,¬Å" this is called the confirmation bias,

like

politicians they do tell you what they did for you not what they didnà f¢Ã¢â€šÂ¬Ã¢â€žÂ¢t for you. Confirmation is trouble for a lot of reasons. First, let me show you this slide. This is a, you know,

(indiscernible)[00:35:5]. Okay and I think they know Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" mathematicians know about uncertain Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" the

knowledge of uncertainty resembles the knowledge of these ladies about night life and fun and partying. Honestly, right? And having spent 9 years working with mathematicians til finally I gave up and teaching create Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" consecrate anxiety in math based instruments and the problem is that

itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s very

mechanistic. Now, so there is a big conflict between probability within non observables and mathematics that requires mechanistic mind looks for certainties. And most of the mathematics we have for randomness is going to be then focused on the Ludic fallacy on Mediocristan things that can be easily mathematized and thatà f¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a tragedy. It is a tragedy because you have this big

wedge between

practice and perception of reality. Okay, coming from mathematics.

The other problem we have à f¢Ã¢â€šÂ¬Ã¢â,¬Å" okay, Ià f¢Ã¢â€šÂ¬Ã¢â€žÂ¢ll make it clear in the next few slides Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" is that we tend to tunnel

The other problem we have Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" okay, IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ll make it clear in the next few slides à f¢Ã¢â€šÂ¬Ã¢â,¬Å" is that we tend to tunnel

tunnel further because Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" otherwise, youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ll have anxiety. So when you project the future, you project

something thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s really narrow that resembles projection of the president even less crazy than a

presidentÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s, okay. And of course, you donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t realize

Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re not crazy enough to imagine the future. I

mean, events that take place Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" if I discussed these black Swans in here 20 years before they happened,

Ià f¢Ã¢â€šÂ¬Ã¢â€žÂ¢m sure that someone would call an ambulance and take me away because this is a scenario of a crazy

ĂƒÂ¢Ã¢â€šÂ¬Ã¢â,¬Å" reality delivers much crazier scenario than our mind can imagine. So

thereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s the tunneling helped by

mechanistic tools.

But why do we do that? Why do we produce these measures of uncertainty? Why do we like to

produce these measures of uncertainty? Well, we have a genetic. We have that Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" we need to reduce

our anxiety by using metrics. ThereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s nothing wrong just talking about uncertainty.



ThereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s something

wrong about talking about certainty to satisfy Ã*f*¢Â€šÂ¬Ã¢â,¬Å" take Novocain or take some or have a drink. ItÃ*f*¢Â¢â€šÂ¬Ã¢â€žÂ¢s better

than produce a forecast if you want to lower your anxiety. (Laughter). And weÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢II see later when I talk

When I was on Wall Street, the fun was to look at projections made by economists. You see, lawyers about the expert, breaking down the expert line.

are very smart. You canÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t catch them because theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re slick and they always manage to give you some

vague answer about anything. Economists, they give you a forecast where you will process it. If you have a computer, you have coffee and you have a trainee, you can process a forecast to see if they work better than cab drivers and they donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t work better than cab drivers. And there is a nological

psychological

explanation is the forecast got worse since they invented this, called the Excel spreadsheet. And at past, you had to sweat to make a forecast. Now you can just extend the cell. You drag and then you drag $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a},\neg\hat{A}$ you extend the cell. So it goes to the year 2020, 2040. You can go to as many

centuries as you

want. It doesnÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t cause you much. And at past, it was labor.

So there is a framing, okay, typically and once she sees it on the piece of paper start believing in it. ItÃfÅ¢Ådeå \in åA¢å \in žÅ¢s

what we call framing. A person who really caught this people with their pants down is Philip Tetlock, who was supposed to be here tonight and Phil Tetlock did process all these and of course, we did the psychology of it. When I met Phil, I just realized that hey, you know what, we know all the psychological biases. But I thin realized that there was a very simple way to figure out which domain we can forecast and which domains resist forecasting. And guess what its Mediocristan was its Extremistan. Domains that have the properties the randomness is Mediocristan property. We are good at forecasting. You know when we deal with stars and so on, our errors are (indiscernible)[00:40:36] and this is where they discovered the application. It is measurement, errors and, you know, astronomy, right? But weÃf¢â€šÂ¬Ã¢â€žÂ¢re not talking about anything social, anything where one single observation

can have

massive consequences. WeÃf¢Â€â€šÂ¬Ã¢â€žÂ¢re not good at forecasting.

So Mediocristan, Extremistan. There is a tableau made by (indiscernible)[00:40:59], all right, where it looks like the know what verus know how distinction works like a souffle chef. You know that he is an expert but an economists, IÃf¢â€šÂ¬Ã¢â€žÂ¢m not sure. Or are they expert - definitely are dressing and not like

looking like

experts but expert at delivering a service as they claim, you know, thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s what I call the faux expert or

pseudo expert.

So now, why do we listen to these people? Well, the first one is - thereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s an old adage, you know. IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m

sure you all know it. DonÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t ask a barber if you need a haircut. Okay. So you canÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t ask someone its

profession so there is a self serving aspect of professions. And the second one is we seemed to like empty suits which allowed me, you know, to formulate the following rule: never take advice from someone wearing suit and tie. It works. It lands up perfectly to the Mediocristan, Extremistan



extinction. It lands up to the faux expert.

Now, there is a lesson. Robert (indiscernible)[00:42:10] figured out something and it was very interesting. That was before the invasion of Iraq that if you have any plans to make war, to engage in war, you donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know whatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s going to ha Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å"

weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re not good at predicting wars because we didnÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t have many wars in our genetic heritage. We did a lot of raids, raids and pillaging. WeÃf¢Â€šÂ¬Ã¢â€žÂ¢re good at

it, we

humans. And he showed how primates are very good at invading territory, killing all the male and all these kinds of thing. So, it looks like simple domains â〚¬Ã¢â,¬Å" again, the errors are from Mediocristan. Weâ〚¬Ã¢â€šÂ¬Ã¢a€žÂ¢re

good at forecasting. Complex domain, we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t understand. We

donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t have the right intuitions. The

link between action and consequence is not as visible.

Errors can be monstrous and dominated by extremes. So again, wars are from Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" since Napoleon, wars

have been more and more from Extremistan. For example, if you want to invade Granada again, go ahead, no problem, all right. If you want to invade China (indiscernible)[00:43:20]. So you see the difference between simple and more complex domain. And of course, weââ〚¬Ã¢â€žÂ¢re going to take

some advice

from Yogi Berra who said, Ã*f*¢Â¢â€šÂ¬Ã…"The future ainÃ*f*¢Â¢â€šÂ¬Ã¢â€žÂ¢t what it used to be.Ã*f*¢â€šÂ¬ Okay. Big philosopher of random

and he understood the point about how weÃf¢Â€šÂ¬Ã¢â€žÂ¢re gliding more and more into some form of concentrated

disorder.

One of the things I discussed on my next book, I studied religion a little bit. I donÃ*f*¢Ã¢â€šÂ¬Ã¢â€žÂ¢t believe in beliefs,

by the way. All right. I donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t believe that we humans is believed to act. I think beliefs have some

other purpose but the problem that I find very inconsistent and I don $\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\in\tilde{A}\neg\tilde{A}\phi\hat{a}\in\tilde{A}\phi$ t know if some (indiscernible)[00:44:05] or these guys are here. I find it extremely inconsistent to be suspicious of the bishops. Okay? Here is an orthodox service because $\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\in\tilde{A}\neg\tilde{A}\phi^{*}$ unorthodox so to be suspicious of

the bishop

and be a sucker when it comes to stock market. Okay? Or listen to the economists. I donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t understand

whatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s metric, double standard you are using, okay, when Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" you know, (indiscernible)[00:44:30] was

saying that these people have double standards, heÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s talking about postmodernists. He said, Ãf¢Â€â€šÂ¬Ã..."Anybody

riding a plane to go to a conference, okay, when they doubt the laws of physics, is a hypocrite. To me, anybody who invested in the stock market who is critical, okay, of religion is a hypocrite. Okay?

ThatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s my point. ThereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s nothing wrong about being critical of religion but you got to go Ãf¢Â¢â€šÂ¬Ã¢â,¬Å" so what

would happen is our skepticism is domain dependent. And weÃf¢â€šÂ¬Ã¢â€žÂ¢re going to test it. There is a very easy metric for me to test skepticism. It took me a while to figure it out. You show things to see if people see false patterns or not. And what I would be testing, I have a little lab in



London at London Business School with Dan Goldstein and weÃf¢â€šÂ¬Ã¢â€žÂ¢re going to test to see if religious

people are not fooled by randomness outside of religion and vice versa. Okay?

So it is a problem, substituting religion with CNBC stock and some Ã*f*¢Ã¢â€šÂ¬Ã¢â,¬Å" you know, that the stock market

analysts, okay, theyÃf¢Â€šÂ¬Ã¢â€žÂ¢re worse than nothing. TheyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re a lot worse than nothing. Okay, so there is an

inconsistency there. And incidentally, I figured out one thing, is that medicine ââ'¬Ã¢â,¬Å" you know that medicine for a long time ââ'¬Ã¢â,¬Å" you had an expert problem in medicine. You still have some expert

problem in medicine. Medicine killed more people than it saved particularly, in the late 18th century Ã*f*¢Ã¢â€šÂ¬Ã¢â,¬Å"

late 19th century until the discovery of penicillin. Okay? Why? Because of something I call the illusion of control and if Ã*f*¢Â¢â€šÂ¬Ã¢â,¬Å"by going to a doctor, you know, you want to do something

Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" going to a

doctor to do something, you hurt yourself. So going to the temple of Apollo or something like that or any form of religion so long as it takes you away from a doctor, is going to be beneficial for you, all right? (Laughter). So thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s the idea religion. People donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t

Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" I have a notion of religion that sort of

conflicted the rest.

To illustrate what I mean by illusion of control, illusion of control is when you go to the casino and you see people wanting to throw a high number on a die, they throw it hard. Okay? And if they want a low number, they throw it soft. Okay? (Laughter). So this is another $\tilde{A}f\hat{A}\phi\hat{a}\in\hat{A}^{\uparrow}A\phi\hat{a},\neg\hat{A}^{\circ}$ this is a council of omic.

economic

advisors with his eminence there and theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re all there. So this is an exercise of illusion of control.

Okay? All right.

So now weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re out of the fun section Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" how many more minutes do I have? Sorry. Let me get technical

here. Sorry. Ten minutes? Okay.

All right, so now let me get to the boring section, all right. This may cause a law suit, I hope. The

gentleman here and here, lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m debating him tomorrow. Very nice gentlemen, seriously, lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m not

attacking him, lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m attacking his statement. Let me talk about probability for a while. So it is going to

get more technical. It is called boring sec Ã*f*¢Â¢â€šÂ¬Ã¢â,¬Å" if you want you can leave and come back for the drinks, all

right. So this gentleman made the following statement. He said these events that we saw last summer should happen every 10,000 years. Actually, he has 3 days in a row, events happen every 10,000 years. If you look at the gentleman, you $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{A}^{\uparrow}\tilde{A}\phi\hat{a}\in\hat{A}^{\downarrow}\tilde{A}\phi\hat{a}$ is see that he is so conservatively younger than 10,000

years so

therefore where is he getting his probabilities from. Okay, not from personal experience. He is definitely is getting his probabilities somewhere. HeÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢s getting it from a theory. All right. So where do you theory from something, in Philosophy weÃf¢Â€ã¬Ã¢â€žÂ¢d call that a priory. There is a

priory. It



doesnÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t come from any form of empirical observation or anything and I donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t know if 10,000 years ago

we were trading. We donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t have the records of what they were doing then. And if they were trading,

how sophisticated they were, what computers they used. So we have a problem with claims made about small probabilities because the smaller the probability, the less observable it is going to be, the more youÃf¢â€šÂ¬Ã¢â€žÂ¢re going to rely on theory and theory is going to be fragile. But let me add something to that problem. And that problem I call it the telescope problem. Okay? What matters is not the probability. What matters is the event. So if I have a small probability of

losing a million dollars, okay, I donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t care about the probability, I care how much I lose. All right? So

what matters is you worry more if you have small probability of being in a plane that crashes and if you have small probability of not having an umbrella under the rain. Okay? So itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s not the probability that

you care about, itââ'¬Ã¢â€žÂ¢s the probability times the event, the nature of the event. So the pair probability

times pi times lambda.

The problem we witnessed here is that the smaller the probability, the more confident they seem to be about that pair pi lambda when, in fact, itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s the most unstable because the smaller the probability, the

more error youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re going to have. The higher the error youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re going to have in the estimation of that

probability. You see, necessarily, if you have smaller number of observations, youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re going to have

larger error. So anybody talking about small probability doesnÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know what he is talking about,

literally, okay? Or theyÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢re not talking about probability. TheyÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢re talking about something else. I donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t

know. A religion or whatever it is. Okay, theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re not talking about probability. All right? So this is a problem even, you know, that we have because that pair, the higher that triangle, I call it pilambda, becomes a lot more random. I mean, to repeat the point. A thousand year flood require a lot more than a thousand years observation. Okay? But a thousand year flood is much more devastating than a hundred year flood, you see. So this is a problem we have at probability.

I know a federal reserve you pay him a visit and let him know, okay, which brings me to prediction markets. Very quickly, lÃf¢Â€ŝ¬Ã¢â€žÂ¢m going to go over the boring section here. People use some ideologic

statement that weÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢re good at predicting number collectively better than individually. You know that

we know (indiscernible)[00:50:50] number of, you know, beans in jar, okay? They infer that we can predict socio-political events. In the first statement you can see the difference. These are for Mediocristan. YouÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢re errors are not going to be monstrous. Okay. The number of (indiscernible)[00:51:06]. The second one is that when you predict the probabilities, it is much easier than predict total contribution of the impact. You see, you know, if you have small probability of having Bill Gates or super Bill Gates, it makes a big difference.

Prediction markets, we may be able to predict prediction markets because it is a binary event. There is



no consequence. It is just yes or no, you see? So whether it is Extremistan or not Extremistan, it may be okay. But even then, you cannot rely on the probability. On using these prediction markets as probability, you look at today. Today, Hillary Clinton is Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" she was like what Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" she had 70% probability

of, you know, she was rating at 70% now she was rating at 50%. So these probabilities change all the

time, how can you rely on them as indicators? ItÃ*f*¢Â€šÂ¬Ã¢â€žÂ¢s like people think that probabilities are like the

temperature. We go have someone from MIT and two Russians whoÃf¢Â€šÂ¬Ã¢â€žÂ¢d come in and whose going to

measure it and get the number, okay? ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s like temperature. ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s not like temperature, we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t

measure it, okay? We estimate it and even collectively, weÃf¢â€šÂ¬Ã¢â€žÂ¢re not better at it. And thereÃf¢Ã€ã€šÂ¬Ã¢â€žÂ¢s things that

even collectively, we would never be able to get because their properties are way too complicated.

This is a problem I have, was using prediction markets. We can use prediction markets to predict how

many car crashes youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re going to have on a highway, maybe not for something more complicated than

Second point I have was Models Versus Practice is a story that metaphor of the ice cube, that I that.

discussed on the Black Swan. I just realized â〚¬Ã¢â,¬Å" I try to read the Black Swan because I was bored, I

didnÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t like it, but I found that that section needed some expansion, right? So Ãf¢Ã€šÂ¬Ã¢â,¬Å" because I realized, you

know what? This is a good idea to discuss, I mean the Ã*f*¢Â¢â€šÂ¬Ã¢â,¬Å" if I-- the problem of most theorists, the

problem of universities is you go from theories to practice. The degrees of freedom, from theories to practice are considerably narrow, small. The reverse is monstrous.

So let me give you this metaphor. If I leave a small piece of ice cube on the floor, okay? You can easily get someone in second year Physics student to write the equation, to tell you how to predict how that ice cube will melt, okay? ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a very simple thing. A secondary student could do it, 2 Diabt

alright? Right

no, someone from Boston, that is, can do it, okay? So the (Laughter) Yeah, so you can predict. So, but now conditional on seeing water on the floor, is it easy to reverse engineer the ice cube? No, we have an infinity of ice cubes. Different shapes that can have -- would have generated. This is exactly the one from theory to practice versus practice to theory. Given something you observe, the observable a generator of observable and no, no, $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi$ okay would be a theory. You have infinite number of

theories

that can do that. Particularly when we are dealing with nonlinearities when particularly one is nonlinear, okay? In nonlinear Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" let me give you this metaphor, solution of problem of tion. The

induction. The

most intelligent piece probably $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\hat{A}\phi\hat{a},\neg\hat{A}^{*}$ piece of work done on a problem of induction since Sextus Empiricus. If I had these series of dots up there, I ask you to extend them in the future, okay? With the linear model, this is one, step one, okay? You can extend them from 20 years into 80 years if it is

linear, you just take a ruler and extend it in the future, you agree? Now, youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re assuming this linear



model. Uh-huh. But it turns out to be nonlinear. How do you know from the part of the sample, okay? So a linear series of points can generate something nonlinear. Or it could be what we have in the fourth graph, so segment is as follows, there is one and one line that could connect series of dots, so you have uniqueness. This is why people like linear models. But we go to nonlinear model, whatever you see can be explained by infinite number of nonlinear series or nonlinear equations. ItÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢s infinite.

So you

realize the explosion the degrees of freedom which is to say that, okay, we have in the nonlinear world,

Iââ'¬Ã¢â€žÂ¢m sure someoneââ'¬Ã¢â€žÂ¢s going to ask me about

(indiscernible)[00:55:34] series and stuff like that. IÃ*f*¢Ã¢â€šÂ¬Ã¢â€žÂ¢II talk

about it. IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m definitely certain from experience that someoneÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s going to ask me about them in the

sessions. So this is why I donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t extend. I donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t deal with the future. The other problem is, it was

parallels. You only can look at them qualitatively. What we call Fractals of Familiarity. Extremistan, as you can say, has one structure which is the Fractals of Familiarity, the one that was, you know, the symbol of the geometry of metal brought.

The problem is that reverse engineering, the parameters is all over the map. ItÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s almost impossible to Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å"

you can just tell that qualitatively, that qualitatively we can do very well. So let me conclude here with my ââ'¬Ã…"what to doââ'¬ or ââ'¬Ã…"what not to do.ââ'¬ I was

in Athens about two months ago and I spoke for about an

hour. And the person told me, Ãf¢Ã¢â€šÂ¬Ã…"Yeah, weÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢ve told this, but now what should we do?Ãf¢Ã¢â€šÂ¬ I had entered the

state of range. That was not ââ'¬Ã¢â,¬Å" you know really,

Ãf¢Ã¢â€šÂ¬Ã…"IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ve been talking for an hour of telling you what not

to do, and you donââ'¬Ã¢â€žÂ¢t count it to the guy who was a consultant, and

donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t count it as advice.Ãf¢Ã¢â€šÂ¬ Negative

advice to me is vastly more important than positive advice, but people donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t think it is important. Just

like if you go to the bookstore, you can only learn for peopleÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s mistakes. You donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t have how I failed

in life. These people, cemetery evenness donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t publish their books, okay. You see how I made it a

million times.

These scripts can be accents but there are regularities and if you see the Ten Commandments, success for a couple I think. They are negative advice and it looks stuck, even almost the adultery part, I mean it did work, so negative advice tends to work compare to positive advice. So I tell you what not to do. What not to do is not to use forecast in a very qualitative way, not the reason for an exile relief, I told you what not to do throughout. So, only throughout $I\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{A}\phi\hat{a}\in\hat{A}\phi$ m going to say ten points.

IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢II try to resist it

because I do not want it to be a business strategy type triathlon that was ten steps to success and how to become a millionaire, all right. So this is why I hate it and people tell me like I was in Washington and someone said I got a forecast that my job is to forecast in economic life. I looked at her and I told her,

Ãf¢Ã¢â€šÂ¬Ã..."The only thin I can tell you is I can just only recommend you but not the job.Ãf¢Â¢â€šÂ¬ I cannot go in and



insult peopleà f¢Â¢â€šÂ¬Ã¢â€žÂ¢s problems. Ià f¢Â€šÂ¬Ã¢â€žÂ¢m not a dentist you know, will you give me your teeth and tell you what

the problem is. I have general world view that is Ãf¢ã€šÂ¬Ã¢â,¬Å" and to fit my world view on a skeptical in persist, I

cannot tell people what to do. I can tell people you have to extend also. Here lÃ*f*¢Ã¢â€šÂ¬Ã¢â€žÂ¢m in the Silicon

Valley; I can tell you very easily, donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t read hard of the business school papers, typically because I find

common mistakes among all of them. They think like the biotech industry. And they say,

Ãf¢Ã¢â€šÂ¬Ã…"Well you

know what, only one company makes money. If you take out the other alternate tech you know that will make money, but of course if you take out the lottery winner, the lottery is $\hat{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\tilde{A},\hat{A}_{1}^{I}$ So, the other technique in the Black Swan domain, conventional metrics of looking at full results; as I think of it future results is inherently flawed without expanding, like biotech of course is not on work in small samples. Because the small sample $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{S}\hat{A}\neg\tilde{A}\phi$ the past does not have the cure for baldness

for example.

I know a few here who would definitely make some company rich if those are cure for baldness.

lââ'¬Ã¢â€žÂ¢m

not the only one; I see some shining thing from the crowd. So there is Ã*f*¢Ã¢â€šÂ¬Ã¢â,¬Å" so expanding to what you

donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t know. So at some industries like biotech; natural cattle stuff like that, you extend the right tail.

In other words, if the Black Swan happens it can only benefit them and sure is company, for Black

Swan happens, this can only hurt them. So itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a very simple rule of thumb of not trusting returns from

banks and underestimating return for a bunch of couple of firms, stuff like that small rule of the thumb.

Also of course, not take advice from someone wearing the tie and stuff like that, and lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m sure people

are asking for more so lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ll leave for the Q&A. Another thing I did discover in the Black Swan is that,

if we have small probability that have dominated our planet, therefore they are going to be survival advantage which does also have long memory.

ThereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a paper showing why matrim Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" you know that elephants are matrimonial; the ladies dominate,

and then old ladies are kept around. Guess why, because they remember droughts, they remember what happened in 1906 or where they have to go to find water, so remember rare events. And societies have used that for a long time. A senate for example Ã*f*¢Ã¢â€šÂ¬Ã…"senatusÃ*f*¢Ã¢â€šÂ¬, it means an old person thatÃ*f*¢Â¢â€šÂ¬Ã¢â€žÂ¢s why they

have the council of elders. They have some you know, thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s why I tried to look older than my age

with my graveyard. Even in Arabic, the term Ãf¢Ã¢â€šÂ¬Ã…"sheÃf¢Ã¢â€šÂ¬ means an old person. So there is a venue in society

for keeping around people who are not productive, simply as advisers on rare events, if that happens weÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re to go. So this is locally Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" there is something what I call Ãf¢Ã¢â€šÂ¬Ã…"knowledge without a causeÃf¢Â¢â€šÂ¬, these few



have a lot of knowledge, they donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t have theories. In economics, we have the exact opposite. For

example, we have crisis like the supreme happened. We have the same on 18 years ago or less, 1990.

Eighteen years ago, wow! Time flies. We had the same one but nobody remembers it because they

simplify to models, so if they donÃf¢Â¢â€šÂ¬Ã¢â€žÂ¢t store they store the theories instead of storing the facts through that

[indiscernible] (01:01:40) as opposed to Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" without realization to store the facts, and theories destroy

that.

And finally, this leads to Ãf¢Â¢â€šÂ¬Ã¢â,¬Å" I was talking about precautionary principle, no itÃf¢â€šÂ¬Ã¢â€žÂ¢s not precautionary, super

precautionary principles is giving some respect to the oldest member of the planet, the planet itself. There are some rules, donââ'¬Ã¢â€žÂ¢t mess with its complex system because we

donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t understand them, we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t

see a link between Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" we donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t understand

whatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s going on, and the planet is smarter than us. ThereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a topic on my next book, its how a lot better at doing not knowing, the different explicit and implicit knowledge, and with better heuristics than theorizing. Theories, we do that for entertainment I think, and then [indiscernible] (01:02:34) like universities at a track record. They are a lot better at PR, tell me whether itÃf¢Â€à€šÂ¬Ã¢â€žÂ¢s good, theyÃf¢Â€šÂ¬Ã¢â€žÂ¢re not really doing things from like you

take birds. You lecture them how

to fly and then they fly, and you explain the miracles of aerodynamics. So we have Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" I mean, of course

they contribute, but we are a lot better at doing it. Why, because of evolution and this happens of what should evolution, what we have on this planet. There is also things that had been longer than us, and it knows a lot more than we do.

When we I go back to the medical empiricist, these people are hyper skeptical, but one thing they did is they respected tradition and age. And age old practice is even, it even makes sense to them. Now the way you had to have the default is to go with what was done rather than you needed to override the default, likewise it leads me to hyper conservatively caught $\tilde{A}f\hat{A}\phi\hat{A}\phi\hat{a}\in\hat{A}^{-}A^{-}\phi\hat{a}$, " A^{-} you know, approach any call.

You donââ'¬Ã¢â€žÂ¢t

have to explain why you donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t want to pollute. You donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t want to explain to come up with some

theories, particularly if the theories can be fragile to someone like me who can go in and show how you can show errors, and all of these forecasting models to justify not polluting. Thank you very much. I think $I\tilde{A}f\hat{A}\phi\tilde{A}\phi\hat{a}\in\tilde{s}\hat{A}\neg\tilde{A}\phi\hat{a}\in\tilde{z}\hat{A}\phi$ m done. I said a lot of things, crammed them in 50 slice, and thanks. STEWART BRAND: We will get the houselights up a little bit so the speaker can see the audience, we can see each other. Say a little more about the sequence of events in your trilogy, the first book or the book that you mostly talked about and now then in the next book.

NASSIM TALEB: The first book is not an interesting book; it is called Fooled by Randomness but as I wrote it you know, like when I was trading half Ãf¢ã€šÂ¬Ã¢â,¬Å" when I wanted to kill time, and it was not very deep.

So I managed Ã*f*¢Â¢â€šÂ¬Ã¢â,¬Å" you know what, and after we write the same book for the Black Swan, nobody realized

it, [indiscernible] (01:04:47) always the same book, and I explained to them if you go to church every



Sunday to listen to the same story. So I rewrote it in a more intelligent way with the second one, and now rewriting the whole thing a third time, completely differently. As I said, focusing on Ã*f*¢Â¢â€šÂ¬Ã¢â,¬Å"

IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m taking

empiricism to the limit, the knowledge without a cause. I donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t leave the knowledge and IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m

discovering things.

After the Black Swan I met a lot of people who gave me evidence, the things like the clinical trials, the things that, thatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s what the person is looking for, in fact no they retrofit their story, and stuff like that.

So our next book is going to be a little more drastic.

STEWART BRAND: Drastic, how?

NASSIM TALEB: Because IÃ*f*¢Â¢â€šÂ¬Ã¢â€žÂ¢m going to make more enemies. Now we already only economist as

enemies, the rest this is a Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" the crowd is not very hostile. I was Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å" tomorrow the crowd is going to be

very hostile. Anybody in finance typically, they have this [indiscernible] (01:05:46) observed, he says

thereÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s a huge cognitive dissonance, cognitive dissonance listening to me, because either IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m right and

what theyÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢re doing is wrong, or I got to be not, or something like that. So they of course, they go for

second option. So at the same time, they donÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢t feel comfortable, you see well I have no argument

against it. So the next time, I think anybody in academia or a lot of people in academia will have this animosity towards me, which will be more fun.

STEWART BRAND: What enemies of the current work surprised you?

NASSIM TALEB: Enemies of what, sorry?

STEWART BRAND: Of the current work. Who is scandalized by this book, this current Ãf¢Ã¢â€šÂ¬Ã¢â,¬Å"

NASSIM TALEB: Well, the economist. Because, lÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢ll explain, number is I use arguments, very simple

arguments against the signs of economics by explaining that they are dangers for society and stuff like that, and the forecasting will rely on it, and I say $\tilde{A}f\hat{A}\phi\hat{a}\in\hat{A}\gamma\hat{A}\dots\hat{a}\in\hat{C}$ (kay, if you go to church is a lot better storing

than listening

to themÃf¢Â¢â€šÂ¬ they got angry. And also, the other things I did were mental brought. We went to a full pronged attack on the economics establishment by showing that their statistics are off, and we went after the Nobel. And now we are going hopping down the Nobel Committee. So these people are not very happy when we call them tarlatans, but they explained to me what makes them different from astrologist. Empirically theyÃf¢â€šÂ¬Ã¢â€šÂ¬Ã¢â€žÂ¢re the same, but they are just as far more elegant. So that was

the one.

When we use these arguments they got very angry. Let me tell you, the funny story is I was in Paris at the Ecole Polytechnic where I was speaking, and I stood up. And at some point I got emotional. And they were all there, all mathematicians almost. And I stood up and said, Ã*f*¢Â¢â€šÂ¬Ã…"Using these techniques,

typically the belt curve to measure risks is not even silly. ItÃf¢â€šÂ¬Ã¢â€žÂ¢s immoralÃf¢Ã¢â€šÂ¬ I said so by shouting. There

was a gentleman who is from the French academy, he stood up,



Ãf¢Ã¢â€šÂ¬Ã…"IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m a member of French Academy of

ScienceÃf¢Ã¢â€šÂ¬ and so on, and it was a scandal so I had to stop. That was my best episode. STEWART BRAND: All right, a bunch of quick questions here. Maybe youÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢II get quick

answers.

The first one is from Sequoia Hex or Sequoia Hax. Is that a real name? Probably, no.

WhatÃ*f*¢Ã¢â€šÂ¬Ã¢â€žÂ¢s going

on at the threshold between the Extremistan and Mediocristan?

NASSIM TALEB: ThatÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s an interesting question. A lot of people have felt was Extremistan, Mediocristan somewhat statistical physics, where the people talk much critical point, bear box book

about criticality that generates power loss, itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s not my point. My point is very simple that pie representation. It causes me to assume Extremistan as an extension of unobservables. So

itÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢s

epistemological. In the end, IÃf¢Ã¢â€šÂ¬Ã¢â€žÂ¢m nothing but a phi