<u>The Black Swan</u>
Nassim Nicholas Taleb

Prologue

p.xvii   Three attributes of a Black Swan:
        1) It lies outside of regular expectations
        2) It carries an extreme impact
        3) Explanations for its occurrence arrive after the fact

p.xix   Central idea: our blindness with respect to randomness, especially the large deviations

p.xx   "The inability to predict outliers implies the inability to predict the course of history"
        We lack awareness of the magnitude of forecast errors

p.xxiv   "...that in order to understand a phenomenon, one needs first to consider the extremes--particularly if,
        like the Black Swan, they carry an extraordinary cumulative effect."

The Apprenticeship Of An Empirical Skeptic

p.8   Triplet of Opacity:
        1) The illusion of understanding: belief that the world is more understandable, explainable and
        predictable than it actually is
        2) The retrospective distortion: memories are limited and filtered, we remember only what matches the
        facts, our memories of past events are thus distorted
        3) The overevaluation of factual information: The world is highly unpredictable regardless of our level of
        education, we tend to evaluate situations differently in the moment than we do after-the-fact

p.14   "Nobody knew anything, but elite thinkers thought that they knew more than the rest because they
        were elite thinkers, and if you're a member of the elite, you automatically know more than the
        nonelite."

p.17   Mention of efficient market theory

The Speculator And The Prostitute

p.27   Scalable professions: those that can increase income without having to increase work or output

p.28   Problems with scalable professions: highly competitive, require being in the right place at the right time
        (luck), huge disparities between efforts and rewards

p.31   "There is more money in designing a shoe than in actually making it: Nike, Dell, and Boeing can get paid
        for just thinking, organizing, and leveraging their know-how and ideas while subcontracted factories in
        developing countries do the grunt work and engineers in cultured and mathematical states do the
        noncreative technical grind."

p.32   Law of Mediocristan: When your sample is large, no single instance will significantly change the
        aggregate or the total (height, weight, calorie consumption)

p.33   Exremistan: Inequalities are such that one single observation can disproportionately impact the
        aggregate, or the total (wealth)

p.34   Black Swans do not surprise Mediocristan--a single event dannot dominate a phenomenon, averages
        reflect the population. There is a high confidence in knowledge from data

p.35   "Mediocristan is where we must endure the tyranny of the collective, the routine, the obvious, and the
        predicted; Extremistan is where we are subjected to the tyranny of the singular, the accidental, the
        unseen, and the unpredicted."

One Thousand And One Days, Or How Not To Be A Sucker

p.40   Original Black Swan problem: "How can we know the future, given knowledge of the past"
        Turkey is fed everyday and believes it will continue, but experiences a reversion of belief just before Thanksgiving

p.44   Black Swans are relative to expectations--they are therefore a sucker's problem

p.45   "In general, positive Black Swans take time to show their effect, while negative ones happen very quickly--it is much easier and much faster to destroy than to build."

Confirmation Shmonfirmation!

        (Covers confimation bias and how it blinds us to Black Swans)

p.52   Round Trip Fallacy: confusion that arises between the following two statements
        1) There is no evidence of the possibility of Black Swans (correct)
        2) There is evidence of no possible Black Swans (incorrect)

p.56   Negative Empiricism: "We get closer to the truth by negative instances, not by verification! It is misleading to build a general rule from observed facts."

p.55   We have a tendency to look for instances that confirm our story--corroborative evidence
        THOUGHT: If you want to prove something is correct, try to prove that it is incorrect

p.58   Popper's system of conjectures and refutations: formulate a bold conjecture then look for an observation that would prove you wrong
        Confirmation bias

The Narrative Fallacy

        (Covers the stories we tell ourselves and how they blind us to Black Swans)

p.63   "The fallacy is associated with our vulnerability to overinterpretation and our predilection for compact stories over raw truths. It severly distorts our mental representation of the world; it is particularly acute when it comes to the rare event."
        We have limited ability to examine sequences of facts without weaving explanation into them. This goes wrong when the explanation increases our impression of understanding

p.68   Perception of causation has a biological foundation
        Information is costly to obtain, store, manipulate and retrieve. Thus we look for patterns or narratives to help simplify the information and make it easier to work with. The Black Swan is left out of the simplification

p.70   Narrativity affects recollection: we remember facts that fit a narrative and forget those that appear to play no role in the narrative. We recall events in a different order than they actually occurred, making history seem much more explainable

p.74   Using news stories to explain unrelated market movements

p.75   Problem of overcausation is with the public-who wants to be told stories

p.76   Narrative as it relates to the Black Swan: messes up our projection of the odds

p.77   Preference for insuring against probable small losses vs. less probable but higher impact

p.79   Fooled by the rarity of Black Swans, but not by the role they play in the aggregate (their impact)

p.83   Our misunderstanding of the Black Swan is attributed to using our fast acting System 1 thought process

Living In The Antechamber Of Hope

p.86   Work done by particular individuals (scientists, researchers, artists) does not deliver consistent or immediate results, instead the outcomes are "lumpy"

p.87   The success of peers in jobs that produce steady results (sales) can present a cruel reality in the appearance of continuous failure

p.88   Our emotions are designed to deal with linear causality (cause and effect), but our world is very nonlinear

p.91   Happiness depends more on the number of instances of positive feelings rather than their intensity. We derive enjoyment from a steady flow of smaller rewards

p.93   The Black Swan is an important event that is not expected to happen. What about the opposite: the unexpected event that you very badly want to happen?

p.96   Turkeys are exposed to major blowups without realizing it
Reverse turkeys are prepared for big events that surprise others
Extreme events can appear safe to suckers, since the risks are hidden or delayed

Giacomo Casanova's Unfailing Luck: The Problem Of Silent Evidence

p.100   Silent evidence is another obstacle that prevents us from fully understanding events
Silent evidence: a form of discrimination or bias of events that actually occurred and makes history appear more positive or more negative than it really was
"One Diagoras, a nonbeliever in the gods, was shown painted tablets bearing the portraits of some worshippers who prayed, then survived a subsequent shipwreck. The implication was that praying protects you from drowning. Diagoras asked, "Where were the pictures of those who prayed, then drowned?" The drowned worshippers, being dead, would have a lot of trouble advertising their experiences from the bottom of the sea. This can fool the casual observer into believing in miracles."

p.101   Silent evidence pervades anything connected to history
THOUGHT: history is written about the winners by the winners?

p.105   Successful businessmen and failed businessmen have many of the same traits: optimism, risk taking, courage, etc. What separates the successful ones from the failures is luck.

p.106   Random simulations show that there will always be some extremely successful outliers
Scalable professions produce large cemeteries of the unsuccessful (they are highly competitive and require luck to succeed)

p.109   Survivorship of gamblers and speculators

p.110   Harm caused by silent evidence: Hurricane Katrina funds, September 11 attacks

p.112   Silent evidence creates an illusion of stability by hiding the risks endured in the past

p.113   Giacomo Casanova experienced several reversals of fortune, but always bounced back by way of luck (unfailing luck)
Those who survive multiple setbacks tend to feel they are indestructible

p.115   A benefit of silent evidence: Economic growth is a product of our ability to take risk against incredible odds (or take risk against odds we don't know about or realize)

p.119   Luck vs. skill, the reference point argument
"Consider once again the example of the gambler. If you look at the population of beginning gamblers taken as a whole, you can be close to certain that one of them (but you do no know in advance which one) will show stellar results just by luck. So, from the reference point of the beginning cohort, this is not a big deal. But from the reference point of the winner (and, who does not, and this is key, take the

losers into account), a long string of wins will appear to be too extraordinary an occurrence to be explained by luck."

The Ludic Fallacy, Or The Uncertainty Of The Nerd

p.125   A nerd is someone who only thinks inside the box they were given. The are slow to catch on to the reality around them.

p.127   In a casino the rules are known and probabilities can almost be calculated (i.e. bell curve shaped) "In real life you do not know the odds; you need to discover them, and the sources of uncertainty are not defined."

p.128   Frank Knight and the distinction between risk and uncertainty Ludic Fallacy: idea the uncertainty can be calculated or quantified

The Scandal Of Prediction

p.138   1. We are demonstrably arrogant about what we think we know
         2. This arrogance has implications when it comes to prediction
         Epistemic arrogance: our hubris concerning the limits of our knowledge

p.139   Humans are horrible at estimating the range of possible outcomes

p.140   "Epistemic arrogance bears a double effect: we overestimate what we know, and underestimate uncertainty, by compressing the range of possible uncertain states."

p.141   Big difference between what people actually know and what they think they know

p.142   There is no effective difference between guessing (what I don't know, but someone else does know) and predicting (what has not yet taken place).

p.143   "When you are employed, hence dependent on other people's judgement, looking busy can help claim responsibility for the results in a random environment. The appearance of busyness reinforces the perception of causality, of the link between results and one's role in them. This of course applied even more to the CEOs of large companies who need to trumpet a link between their "presence" and "leadership" and the results of the company."

p.144   The more information one is presented with the more hypothesis they will make and the worse off they will be. Random noise is mistaken for information
         Fire hydrant experiment: blurry image of fire hydrant that gradually becomes more clear

p.146   Real experts have "know-how" (surgeons) while fake experts have "know-what" (economic forecasters)
         Experts who are experts: test pilots, chess masters, physicists, accountants
         Experts who are not experts: stockbrokers, judges, psychologists, councilors, economists

p.147   Things that move and require knowledge do not usually have experts while things that don't move have some experts
         The problem with experts is they do not know what they do not know

p.148   Taleb on economic forecasts

p.150   Failure of security analysts predictions
         "The only regularity Tetlock found was the negative effect of reputation on prediction: those who had a big reputation were worse predictors than those who had none."

p.152   Exogenous events (those that lie outside the predictors expertise) can occur and greatly impact outcomes

"...linking one's performance to a given script is how nerds explain the failures of mathematical methods in society. The model is right, it worked well, but the game turned out to be a different one than anticipated."

p.153   Tetlock's hedgehog and fox metaphor

p.156   "Plans fail because of what we have called tunneling, the neglect of sources of uncertainty outside the plan itself."

p.157   Planning with the unexpected in mind takes guts

p.158   Anchoring, we make predictions based on a point of reference

p.161   Three fallacies faced when forecasting without incorporating an error rate
      1. Variability matters: error rate can be more significant than the projection itself
      2. Failing to account for forecast degradation as the projected period lengthens
      3. Misunderstanding the random character of the variables being forecast

How To Look For Bird Poop

p.166   Many of the greatest inventions and discoveries were a product of serendipity. People looking for one thing, but finding another (those looking for another route to India accidentally discovered America)

p.168   When new technologies emerge we either grossly underestimate or severely overestimate it's importance

p.170   "To predict the spread of a technology implies predicting a large element of fads and social contagion, which lie outside the objective utility of the technology itself"

p.171   Karl Popper's central argument: in order to predict historical events you need to predict technological innovation, which itself is unpredictable

p.172   Law of Iterated Expectations (strong form): If I expect to expect something in the future, then I already expect that something at present
Law of Iterated Expectations (weak form): To understand the future to the point of being able to predict it, yo uneed to incorporate elements from this future itself

p.173   "Prediction requires knowing about technologies that will be discovered in the future. But that very knowledge would almost automatically allow us to start developing those technologies right away. Ergo, we do not now what we will know."

p.176   Poincare introduces the idea of nonlinearities, small effects that lead to severe consequences. These nonlinearities lead to limits in forecasting
"as you project into the future you may need an increasing amount of precision about the dynamics of the process that you are modeling, since your error rate grows very rapidly."

p.178   Example from mathematician Michael Berry-what influences the motion of a billiard ball

p.184   Economists ignore the fact that people may prefer to do something other than maximize their own economic interests

p.189   "Why do we listen to experts and their forecasts? A candidate explanation is that society reposes on specialization, effectively the division of knowledge."
"We have a natural tendency to listen to the experts, even in fields where there may be no experts."

Epistemocracy, A Dream

p.192   epistemocracy: a society in which every individual is aware of their ignorance, not their knowledge

p.194   As we learn from the past we believe that our understanding and solutions are definitive, but fail to realize that those coming before us also had definitive solutions

"We laugh at others and we don't realize that someone will be just as justified in laughing at us on some not too remote day."

p.195   anticipated utility: overestimating the effects of both pleasant and unpleasant future events on our lives (i.e. buying a new car)

p.196   Attempting to reverse engineer history is difficult. You can predict that an ice cube will melt into a puddle; however, it is difficult to determine if a puddle came from an ice cube

p.198   "In practice, randomness is fundamentally incomplete information."

Appelles The Painter, Or What Do You Do If You Cannot Predict?

p.201   The demand for certainty is an intellectual vice (Bertrand Russell quote)

p.203   How to deal with not being able to predict the future: be human, have emotions, do not always withhold judgement and allow yourself some epistemic arrogance, just limit it to small, short-term stuff

p.204   Maximize the serendipidy around you as it can lead to positive accidents (i.e. the discovery of viagra)
         We need to love to lose and embrace failure
         We are ashamed of losses and thus engage in low volatility strategies; however, these strategies have a potential to "blow-up" and thus are highly risky

p.205   "Furthermore, this trade-off between volatility and risk can show up in careers that give the appearance of being stable, like jobs at IBM until the 1990s. When laid off, the employee faces a total void: he is no longer fit for anything else."
         Barbell Strategy: divide portfolio between extremely risky assets (levered options, venture capital, etc.) and extremely safe assets (Treasury Bills)

p.206   Tricks to take advantage of unpredictability:
         a. Make a distinction between positive contingencies and negative ones
         b. Don't look for the precise and local (do not be narrow minded)
         c. Seize any opportunity, or anything that looks like opportunity
         d. Beware of precise plans by governments
         e. "There are some people who, if they don't already know, you can't tell 'em."

p.210   common thread in these tricks is asymmetry: put yourself in situations where favorable outcomes are larger than unfavorable ones
         Pascal's wager

p.211   "This idea that in order to make a decision you need to focus on the consequences (which you can know) rather than the probability (which you can't know) is the central idea of uncertainty."

From Mediocristan To Extremistan, And Back

p.216   Economist Sherwin Rosen and the tournament effect: someone who is marginally better can easily win the entire pot. This argument focuses only on skills and does not account for luck

p.217   The Matthew Effect or cumulative advantage (promotes Extremistan environment)

p.221   Nobody is safe in Extremistan, a loser may always be a loser, but a winner could easily fall to someone else who comes along

p.222   "Capitalism is, among other things, the revitalization of the world thanks to the opportunity to be lucky. Luck is the grand equalizer, because almost everyone can benefit from it. The socialist governments protected their monsters and, by doing so, kiled potential newcomers in the womb."

p.223   Nobody is threatened from extinction either (in Extremistan)

The Bell Curve, That Great Intellectual Fraud

The Aesthetics Of Randomness

Locke's Madmen, Or Bell Curves In The Wrong Places

The Uncertainty Of The Phony