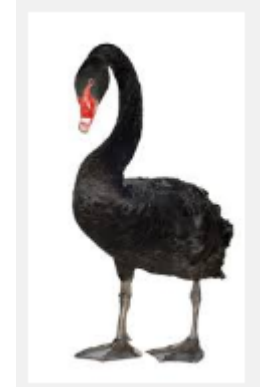


# Emergency Preparedness from a Different Angle

AKA Black Swans

# Black Swans



Things that happen, we don't expect, and have nasty consequences.... We possibly dwell on their looming presence, and keep us awake at night..

Happy.... Happy.... Happy.....

Phil Robertson

# Black Swans

- What is a Black Swan?
- What are the characteristics of a Black Swan?
- What on earth does Black Swans have to do with Quality Management?
- What is the impact of Black Swans on predicting the future?
- Where do Black Swans come from?
- So what?
- How do we know if our systems can manage a Black Swan?  
Black Swans are not sheep, they keep you awake at night
- Strategies to buffer our systems from Black Swans.....

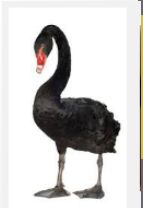


# What is a Black Swan?

- Black Swan is a metaphor
- Prior to the discovery of Australia, people of the New World were convinced...ALL swans were white..
- What does this illustrate?
  1. Severe limitations to our learning from observation or experience
  2. Fragile nature of our knowledge



What does this mean to you?



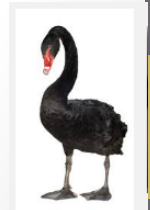
# What are the characteristics of a Black Swan?

1. It is an “Outlier” outside the realm of our regular expectations. They are unexpected!!!
2. These events carry extreme consequences.
3. We develop explanations for the event, after the fact, making it seem explainable and predictable.

**Rare**

**Extreme Impact**

**Retrospective NOT Prospective  
(predictability)**



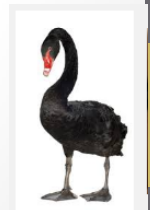
# What on earth does Black Swans have to do with Emergency Preparedness?

1. Take on the form of:
  - i. Mother Nature
  - ii. Acts of terrorism
  - iii. Human error
  - iv. Intentional economic adulteration
  - v. Consumer complaints
  - vi. Hold events
  - vii. Defective product events
  - viii. Withdrawal/recall
  - ix. Fatality
  - x. Anything with negative unintended consequences
2. Looming presence keeps us awake at night (consequences)



# What is the impact of Black Swans on predicting the future?

- **The impact and role of the Black Swan event leads to the degradation of predictability!!!**
- Internet, laser, computer, antibiotics all have in common being invented by accident, positive Black Swan



# Yogi Berra.....

- Its difficult to make predictions, especially about the future.....



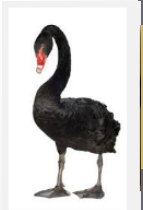


# Still more from Yogi.....

- The future isn't what it used to be...



Think about the impact on the future  
and future conditions



# More on prediction.....

- Henri Poincare famous mathematician demonstrated the need to increase the amount of precision about the dynamics of the system you are trying to measure.
- Error is not linear
- Consider the billiard ball scenario



# Still more on prediction.....

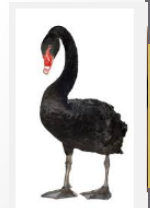
- How do I mitigate the impact predictions and gauge the value?

Prediction – any prediction - Without skin in the game can be as dangerous for others as unmanned nuclear plants without the engineer sleeping on the premises. Pilots should be on the plane.

Nassim Taleb



Think about skin in the game or even  
“soul” in the game.



# Using the past to predict the future.....

- “Well that’s never happened before, therefore it’s not likely to happen in the future”.

Turkey, I say Turkey.....



Think about you never died before.  
Statistically, you are immortal!!



# Using the past to predict the future..... Last thought

- Who said the following

“But in all my experience, I have never been in an accident.... Of ant sort worth speaking about. I have seen but one vessel in distress in all my years at sea. I have never saw a wrecked and never have been wrecked nor was I ever in a predicament that threatened to end in any disaster of any sort.

E.J Smith, 1907, Captain, RMS Titanic



# Using the past to predict the future.....

- The mother of harmful mistake we make.....

We mistake absence of evidence (of harm) for evidence of absence.....

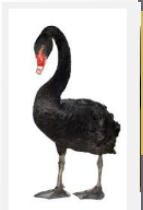
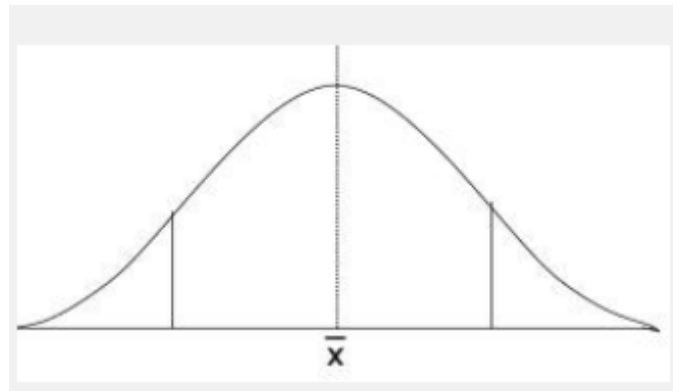


Think about examples...



# Where do Black Swans come from?

- Central Limit Theorem can be very misleading
- Black Swan originate in the area between what we know and what we think we know.....

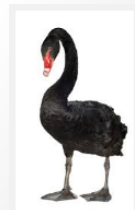


# Bell Curve fallacies...?

A “true” bell curve “Gaussian Distribution” does not exist in real life.

“one of the most common (but useless) comments I hear is that some solutions can come from “robust statistics”. I wonder how using these techniques can create information where there is none.”

Currently where our consumer complaints is right now...





# Bell Curve fallacies...?

We don't know what we don't know.

Lack of knowledge about the mean.



# So what...?

Recap....

1. Stuff happens
2. Stuff stinks
3. We can't predict when stuff is going to happen
4. We Don't know stuff for certain about the future
5. Is all this stuff out of our control?
6. What do I do about this stuff?
7. What is this stuff all about?



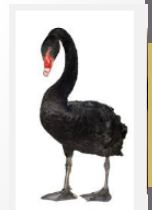
# In perspective...

Do not attempt to predict black swan events, but build robustness against negative ones that occur and be able to exploit positive ones.

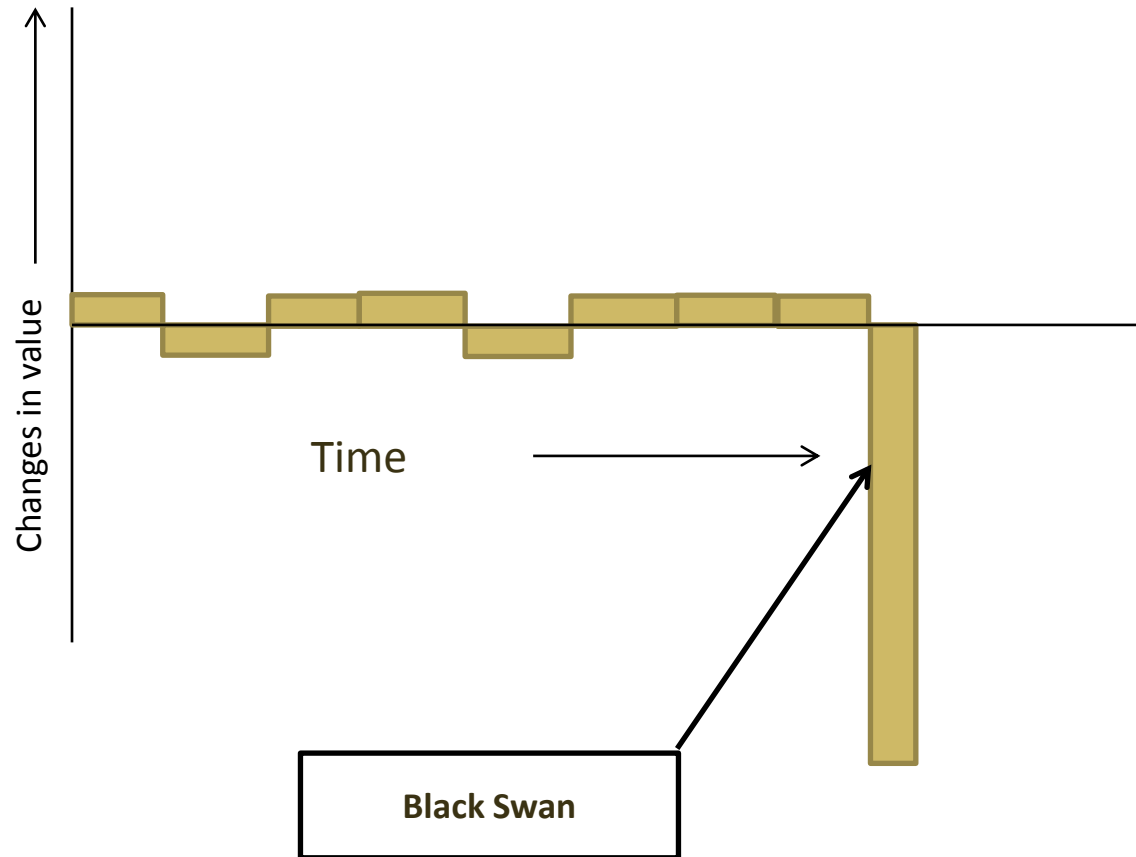
How vulnerable to hazardous black swan events is our systems?

And...

How exposed to unpredictable losses are they?

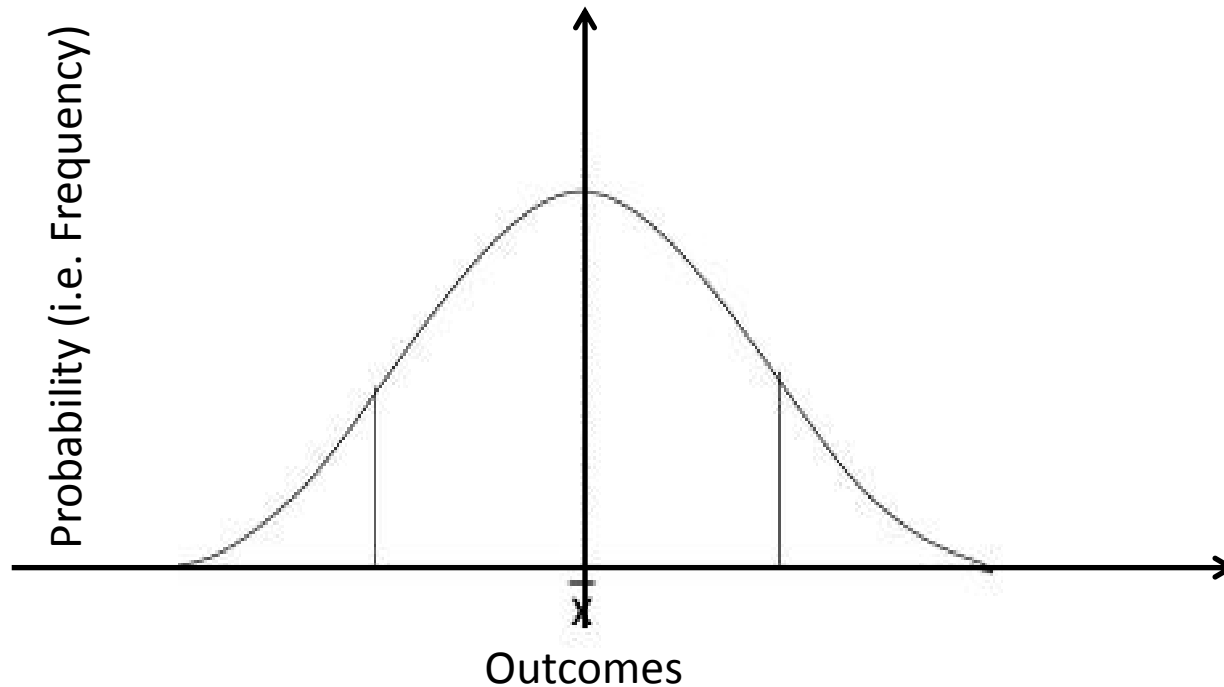


# Types of Systems...



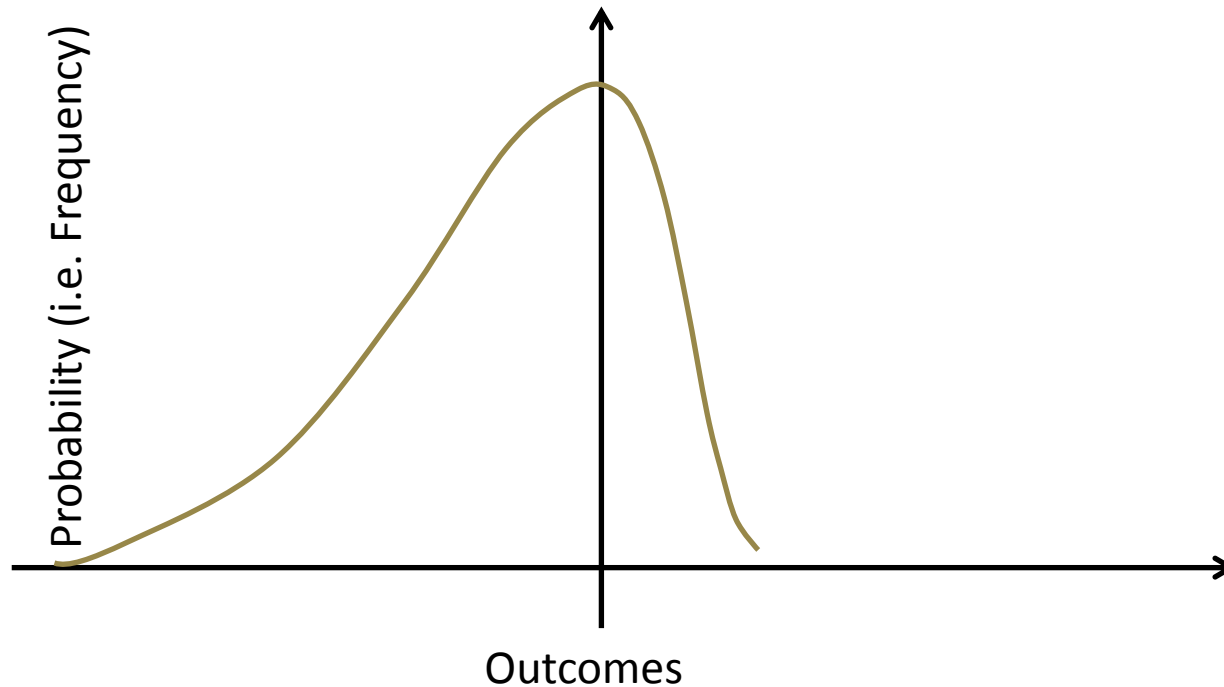
# Types of Systems...

- Fragile Type 1 (very rare)



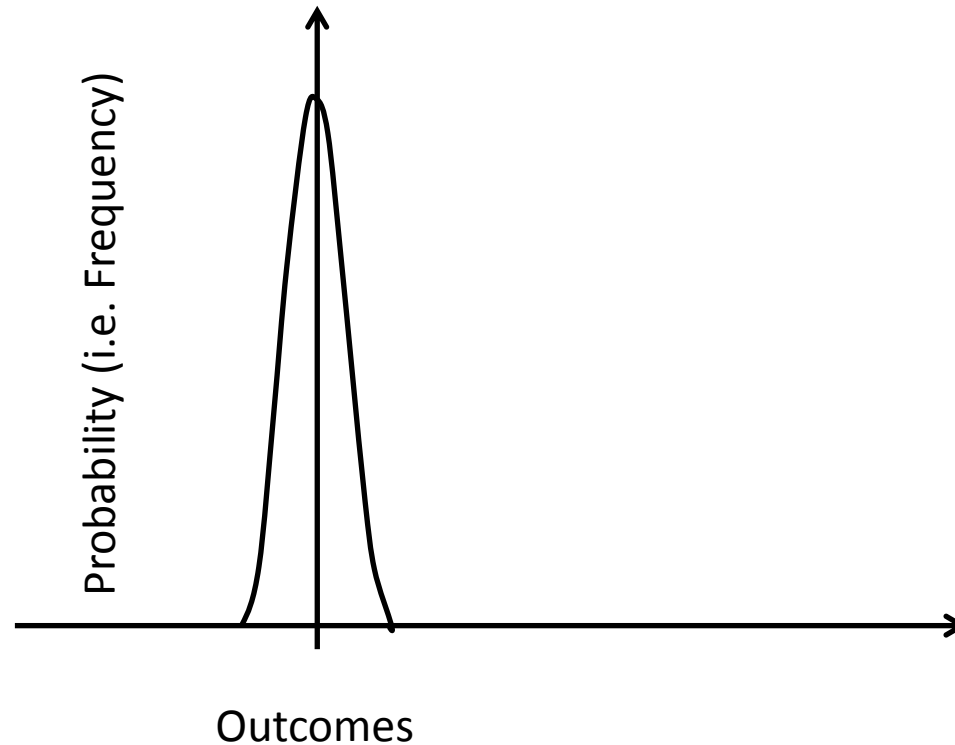
# Types of Systems...

- Fragile Type 2



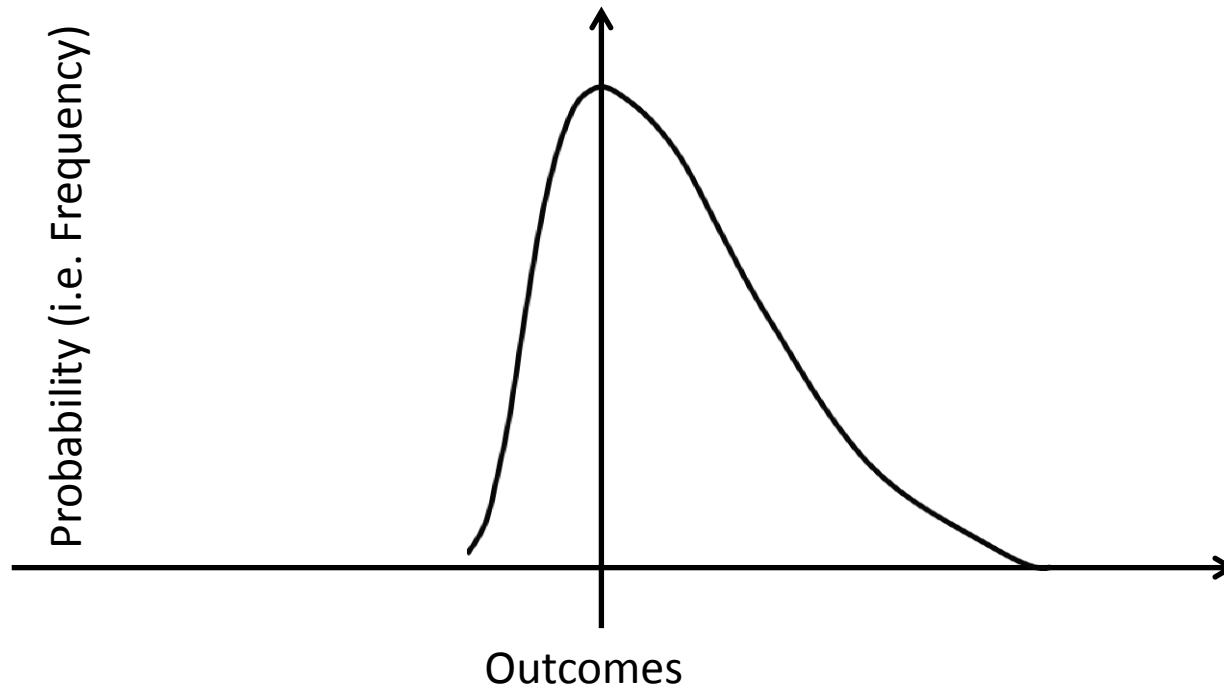
# Types of Systems...

- Robust



# Types of Systems...

- Anti-fragile





# Types of Systems...

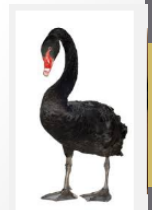


Think about examples...



# The Turkey revisited

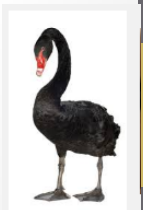
- black swan event depends on the observer. For example, what may be a black swan surprise for a turkey is not a black swan surprise to its butcher;
- hence the objective should be to "avoid being the turkey" by identifying areas of vulnerability in order to "turn the Black Swans white".<sup>1</sup>



How do we know if our systems can manage a Black Swan?  
Black Swans are not sheep, they keep you awake at night



Think about it...



## Strategies to buffer our systems from Black Swans.....

1. Redundancy
2. Optionality
3. Exposure to Black Swans



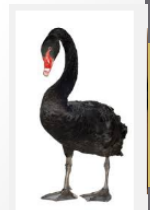
Strategies to buffer our systems from Black Swans.....

"avoid being the turkey" by  
identifying areas of  
vulnerability in order to  
"turn the Black Swans  
white"



# Top 10 Strategies to buffer our systems from Black Swans.....Exposure to Black Swans

1. Embrace consumer complaints as Romeo did Juliet
2. Look forward to internal audits like Christmas morning
3. Take joy in the learning from product holds
4. Be really really good at making mistakes
5. Compensate complexity with simplicity
6. Do not give an addict more drugs if he has withdrawal pains
7. Don't ever accept "one of one"
8. Beware of the critical path
9. People who drive school busses blindfolded and crashes, should not be given a new bus.
10. Do not give children dynamite sticks, even if they come with a warning label.



Thank you....

Questions????

