RISKNZ

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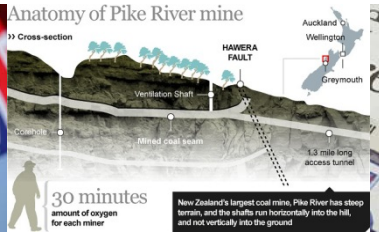
Learning to Live in a Complex World

The Black Swan and Beyond



Matt Bilderbeck

NAVIGATUS CONSULTING

NEW YORK TIMES BESTSELLER

SECOND EDITION

With a new section: "On Robustness and Fragility"

THE BLACK SWAN

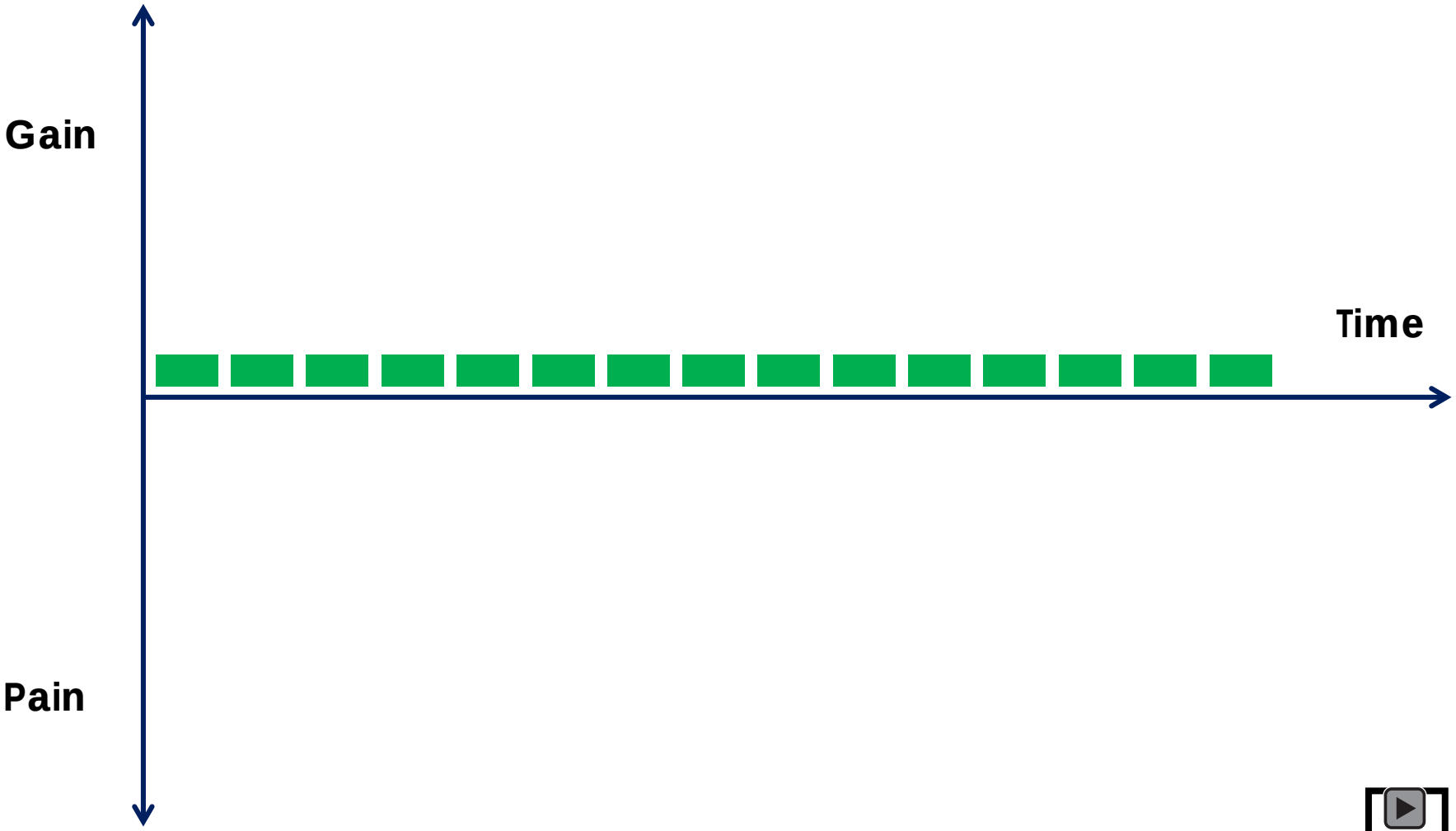
The Impact of the HIGHLY IMPROBABLE

Nassim Nicholas Taleb

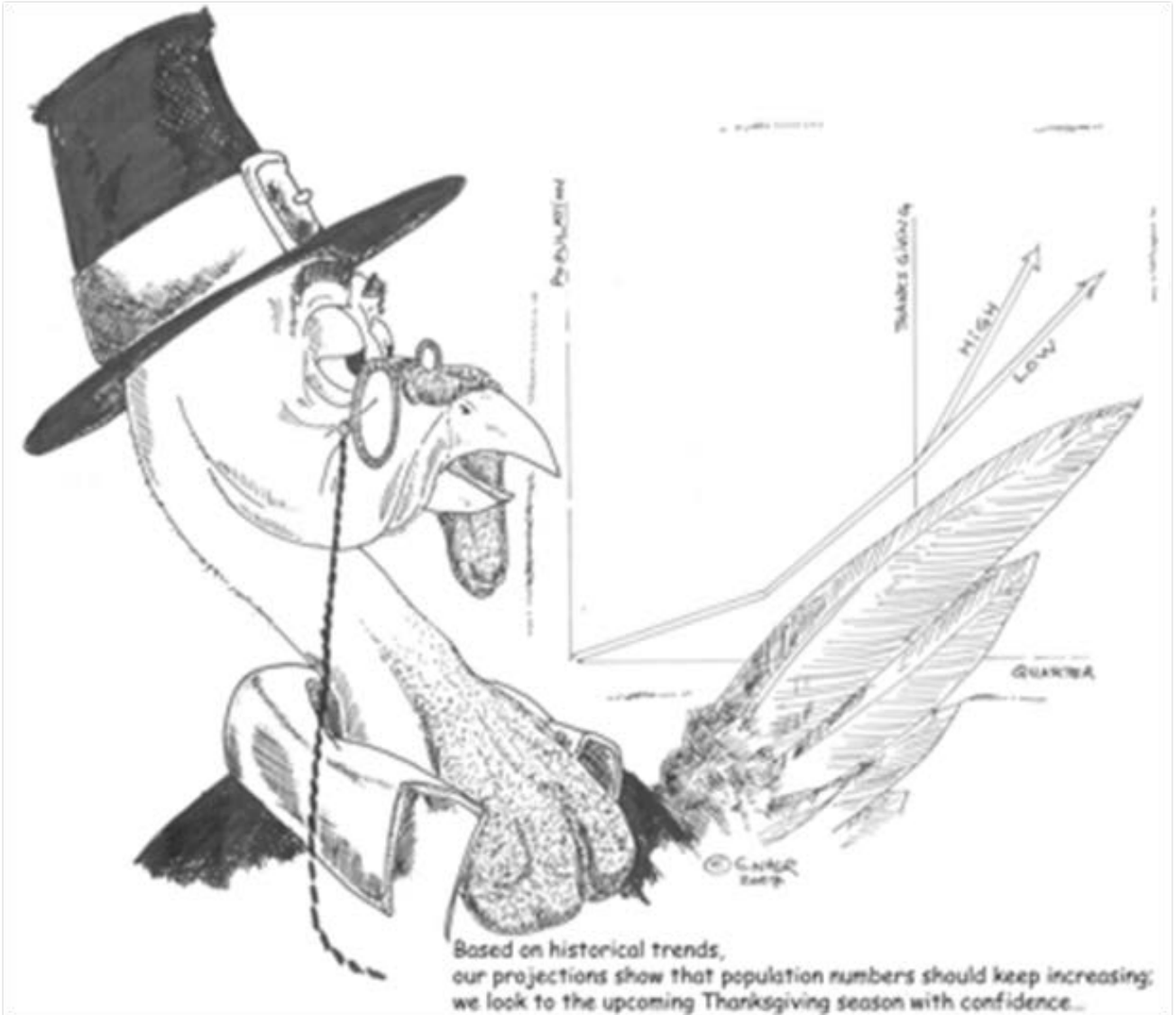
Contents

The Life of a Turkey

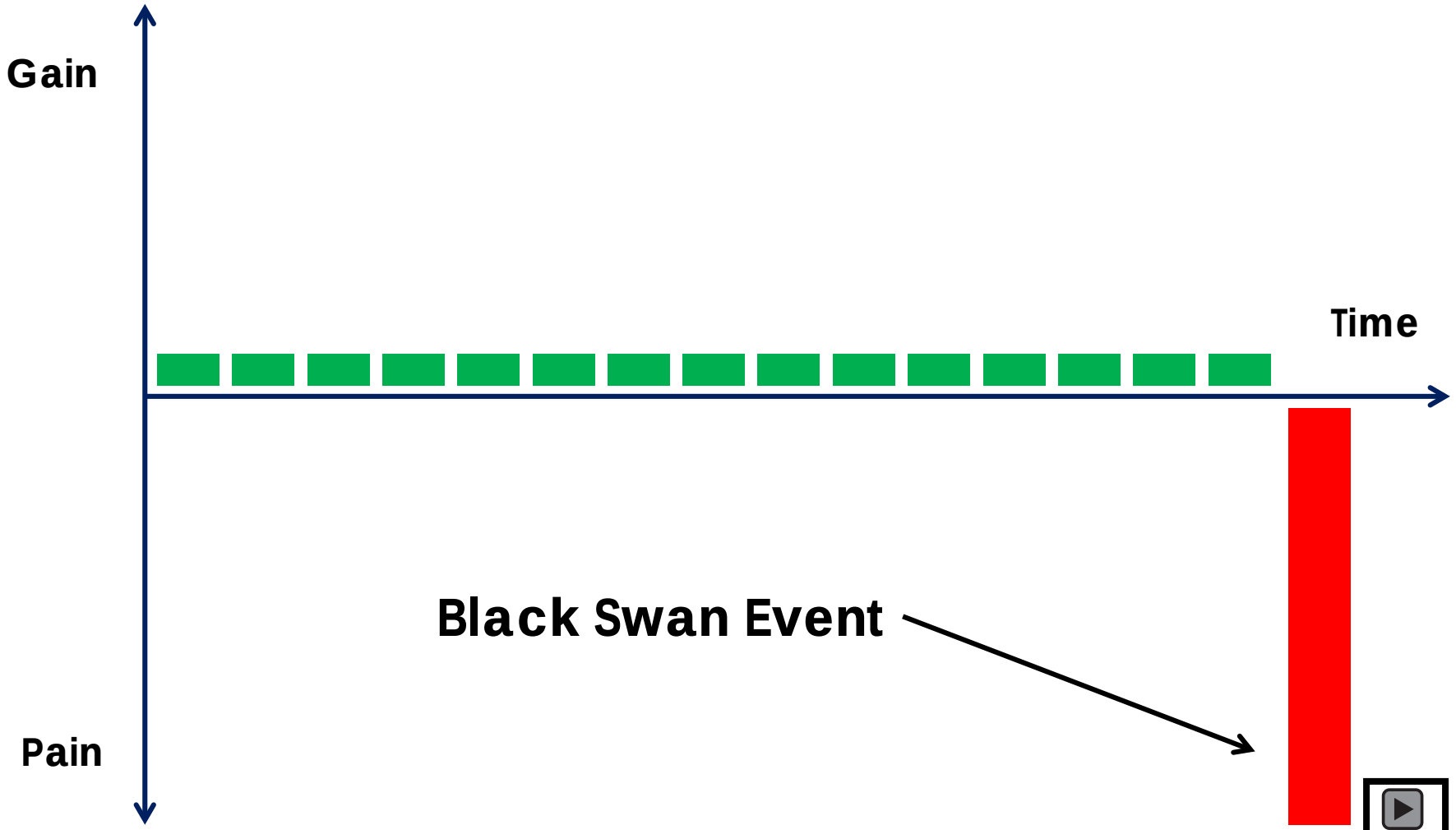
Historical Observations



Evidence-Based Projections



A Black Swan Event…



What is a Black Swan?

- Outlier
- Extreme impact
- Rationalised in hindsight

Some Examples…

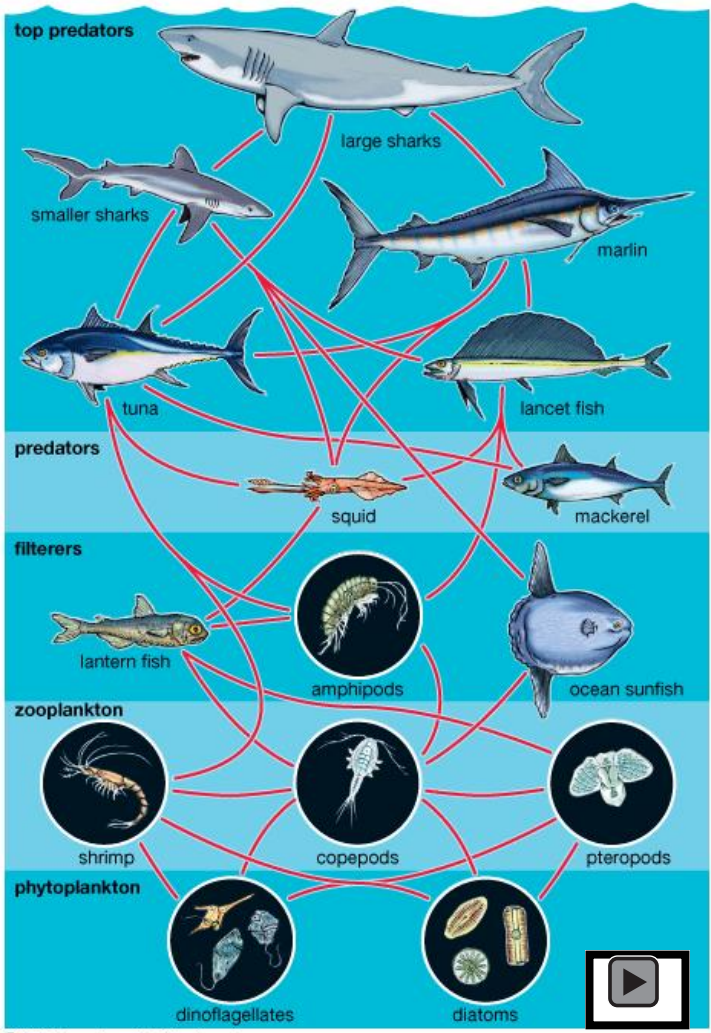
- Rise of the internet
- The personal computer
- World War I
- Dissolution of Soviet Union
- 11 September 2001 attacks

Contents

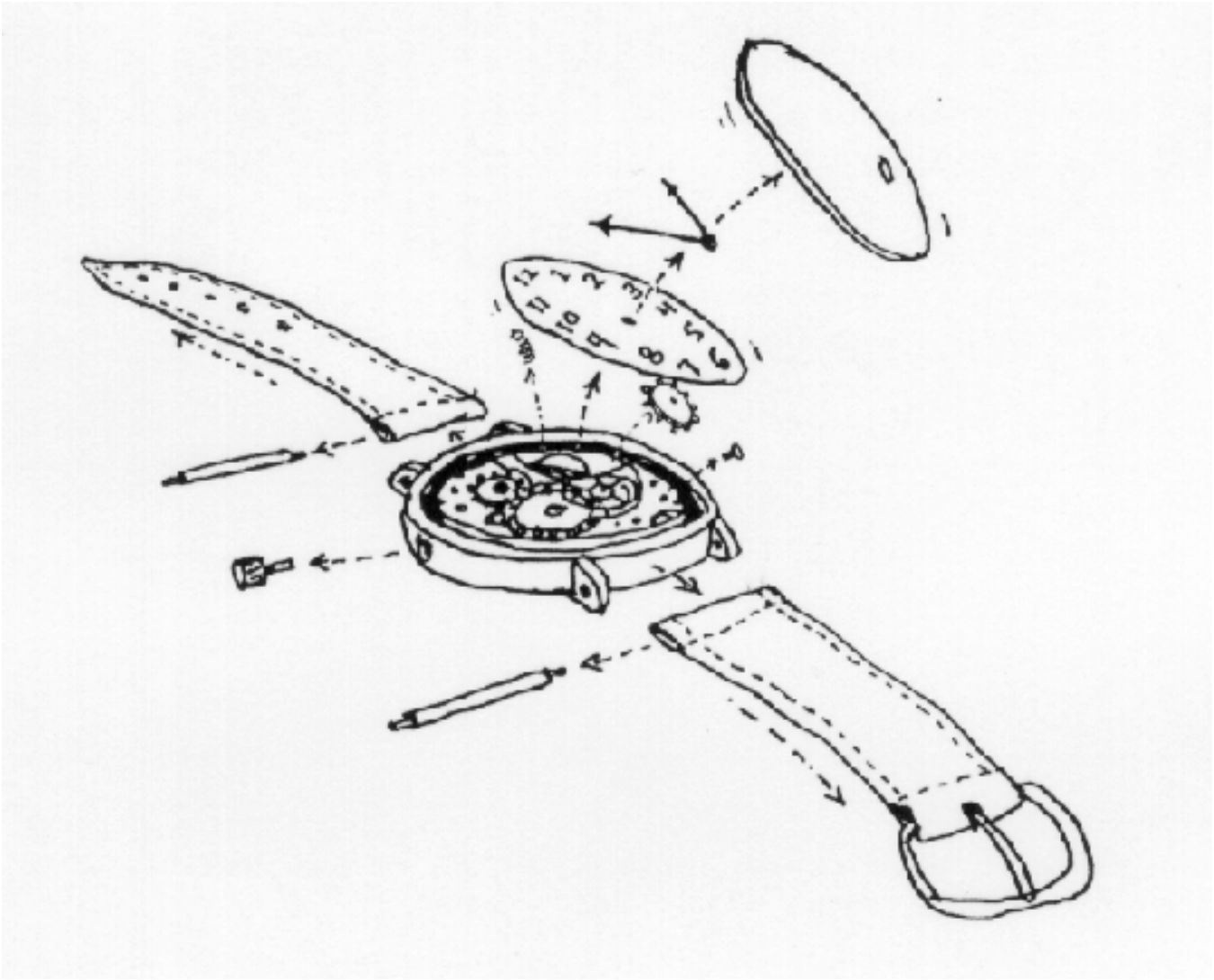
Complexity Rising

Nonlinear Responses

Interdependencies



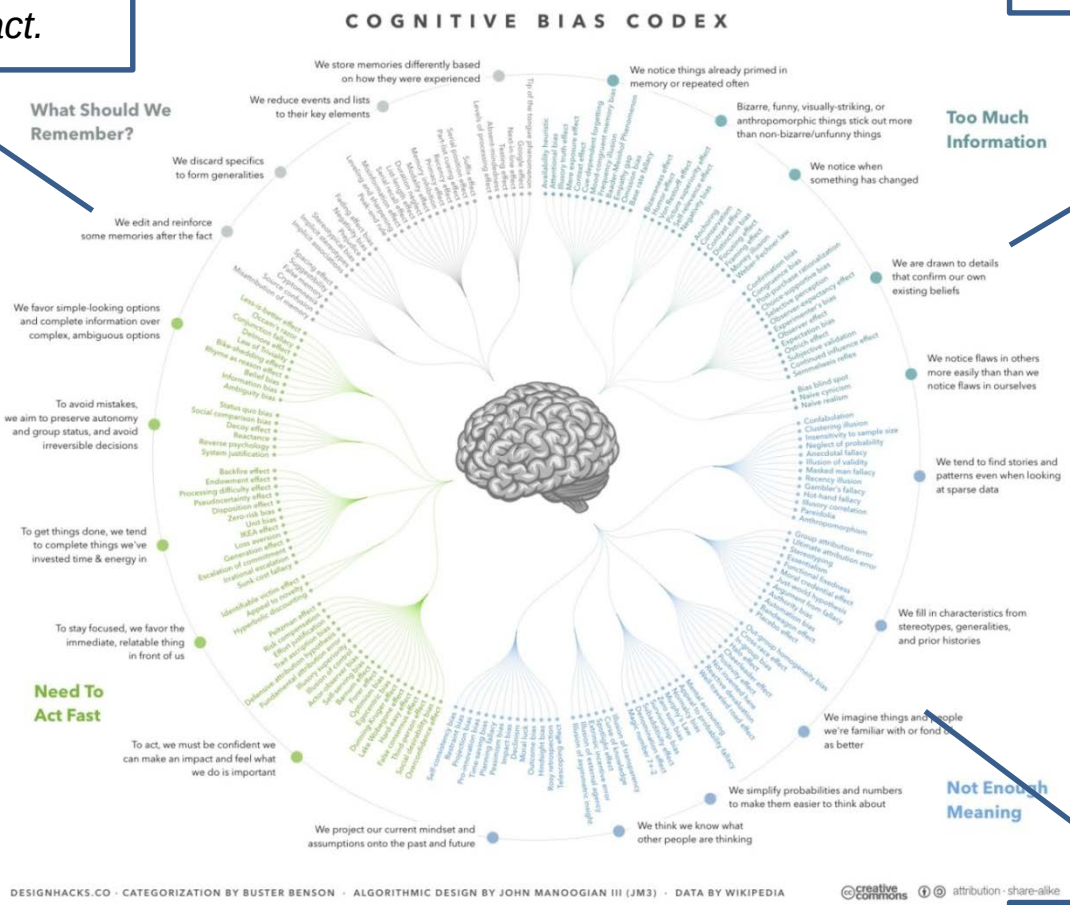
Predict, Optimise, and Control



Cognitive Biases

We edit and reinforce some memories after the fact.

We are drawn to details that confirm our own existing beliefs.

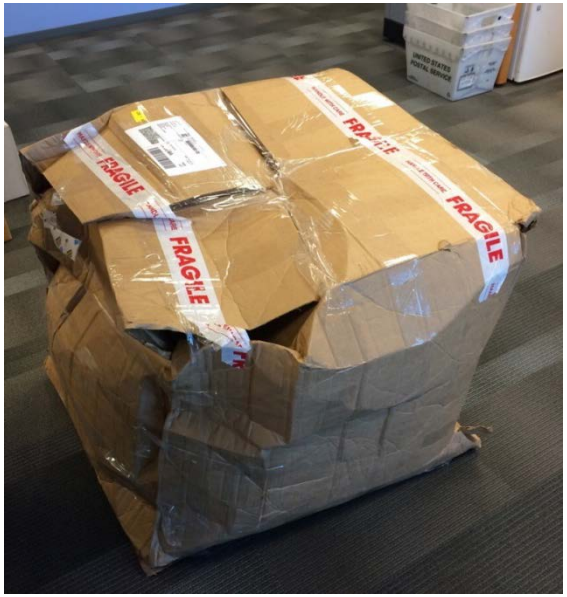


We simplify probabilities and numbers to make them easier to think about.

Contents

Three Categories

Fragile

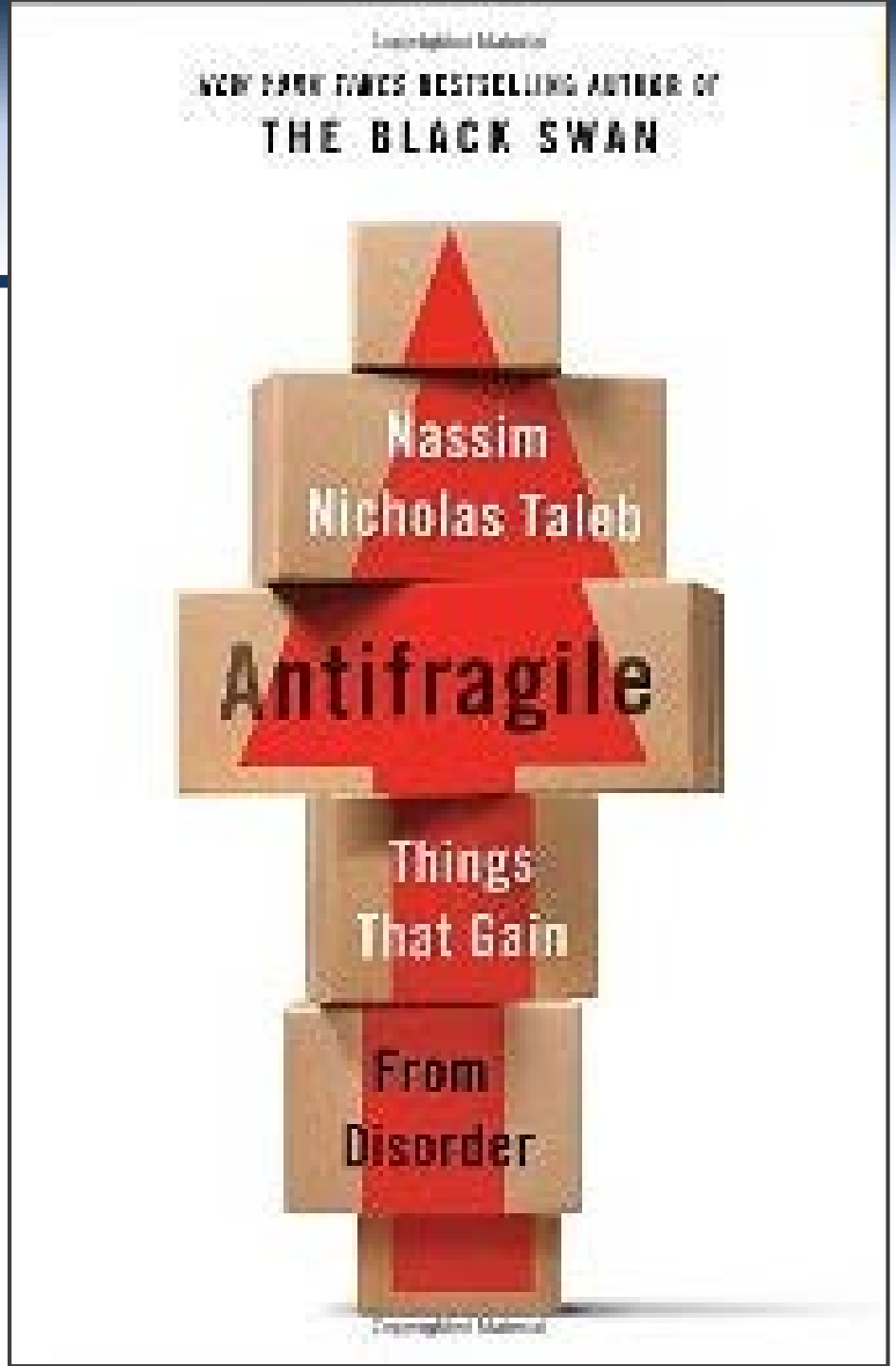


Robust

Beyond Robust…

???

Antifragile


NEW YORK TIMES BESTSELLING AUTHOR OF
THE BLACK SWAN
Nassim
Nicholas Taleb
Antifragile
Things
That Gain
From
Disorder

Becoming Antifragile

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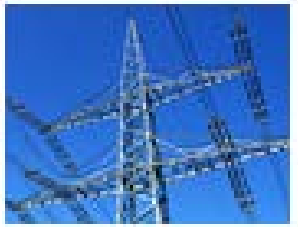
Thank You



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Phone: +64 274 528 630

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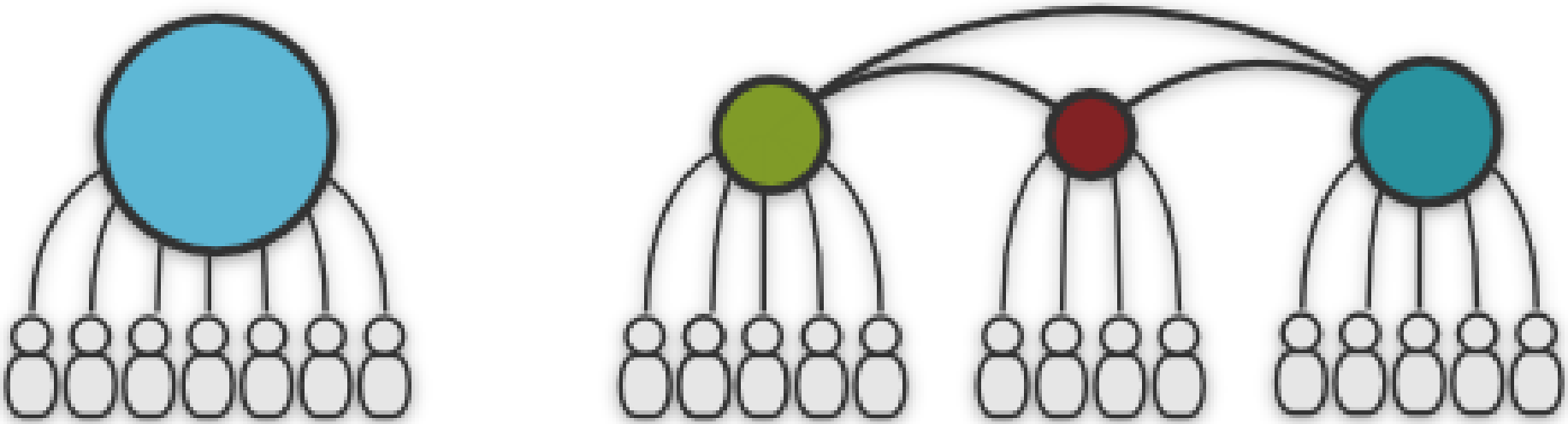
Additional Slides

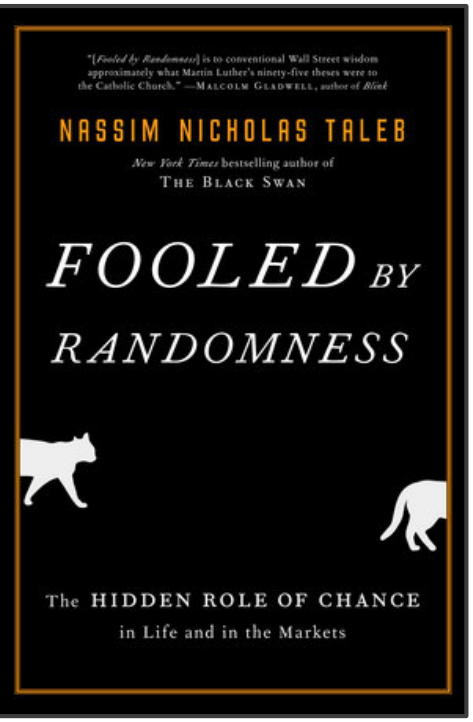

JUST A NORMAL DAY AT THE NATION'S MOST IMPORTANT FINANCIAL INSTITUTION...
I'VE GOT A STOCK HERE THAT COULD REALLY EXCEL
REALLY EXCEL?
EXCEL?
SELL?
SELL?
SELL
SE
SELL!
SELL!
KAL '89
SELL!
SELL!
SELL!
SELL!
THIS IS MADNESS! I CAN'T TAKE ANYMORE
GOOD BYE!
GOOD BYE?
BYE?
Buy?
Buy!
Buy!
Buy!!
Buy!
Buy
Buy!
I'VE GOT A STOCK HERE..

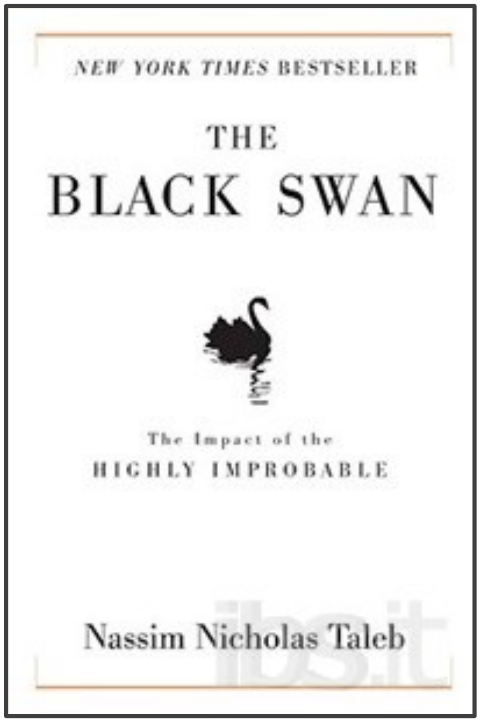
Mediocristan vs. Extremistan

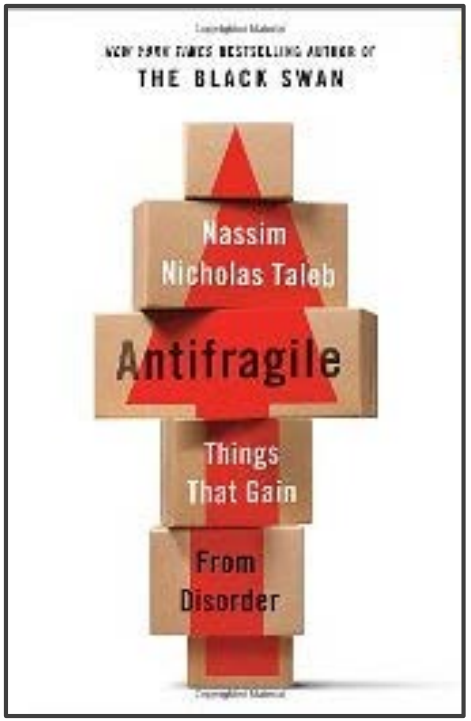
Decentralisation

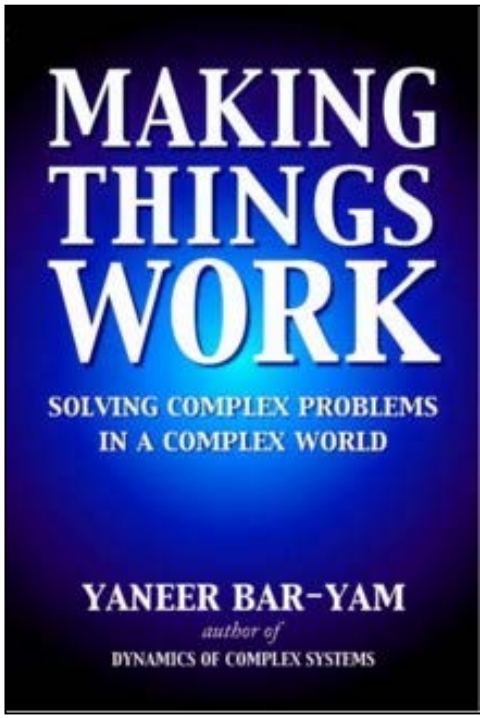


Further Reading









The Precautionary Principle (with Application to the Genetic Modification of Organisms)

Nassim Nicholas Taleb*, Rupert Read§, Raphael Douady‡, Joseph Norman†, Yaneer Bar-Yam†
*School of Engineering, New York University †New England Complex Systems Institute
‡ Institute of Mathematics and Theoretical Physics, C.N.R.S., Paris
§School of Philosophy, University of East Anglia

Abstract—The precautionary principle (PP) states that if an action or policy has a suspected risk of causing severe harm to the public domain (affecting general health or the environment globally), the action should not be taken in the absence of scientific near-certainty about its safety. Under these conditions, the burden of proof about absence of harm falls on those proposing an action, not those opposing it. PP is intended to deal with uncertainty and risk in cases where the absence of evidence and the incompleteness of scientific knowledge carries profound implications and in the presence of risks of "black swans", unforeseen and unforeseable events of extreme consequence.

This non-naive version of the PP allows us to avoid paranoia and paralysis by confining precaution to specific domains and problems. Here we formalize PP, placing it within the statistical and probabilistic structure of "ruin" problems, in which a system is at risk of total failure, and in place of risk we use a formal "fragility" based approach. In these problems, what appear to be small and reasonable risks accumulate inevitably to certain irreversible harm. Traditional cost-benefit analyses, which seek to quantitatively weigh outcomes to determine the best policy option, do not apply, as outcomes may have infinite costs. Even high-benefit, high-probability outcomes do not outweigh the existence of low probability, infinite cost options—i.e. ruin. Uncertainties result in sensitivity analyses that are not mathematically well behaved. The PP is increasingly relevant due to man-made dependencies that propagate impacts of policies across the globe. In contrast, absent humanity the biosphere engages in natural experiments due to random variations with only local impacts.

PP states that if an action or policy has a suspected risk of causing severe harm to the public domain (such as general health or the environment), and in the absence of scientific near-certainty about the safety of the action, the burden of proof about absence of harm falls on those proposing the action. It is meant to deal with effects of absence of evidence and the incompleteness of scientific knowledge in some risky domains.[1]

We believe that the PP should be evoked only in extreme situations: when the potential harm is systemic (rather than localized) and the consequences can involve total irreversible ruin, such as the extinction of human beings or all life on the planet.

The aim of this paper is to place the concept of precaution within a formal statistical and risk-analysis structure, grounding it in probability theory and the properties of complex systems. Our aim is to allow decision makers to discern which circumstances require the use of the PP and in which cases evoking the PP is inappropriate.

2 Decision Making and Types of Risk

Links

Real World Risk Institute:

- realworldrisk.com

New England Complex Systems Institute:

- necsi.edu