Failures and Fallacies

What have we learned the other day?

Basic economic principles – influencing our decision making

Notions of rationality, efficiency, risk avoidance, or opportunity costs

Any thoughts from yesterday?

Example:

Decision maiking as indivduals vs. decision making as a group
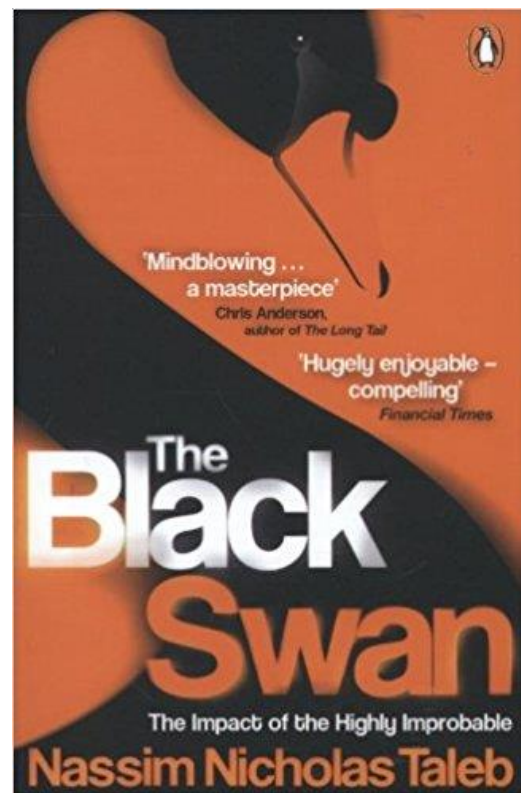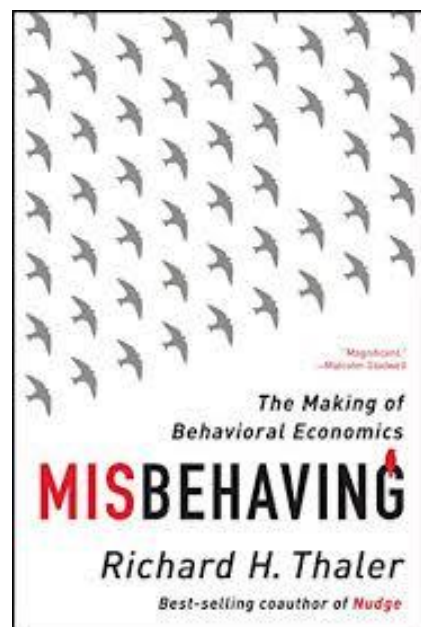
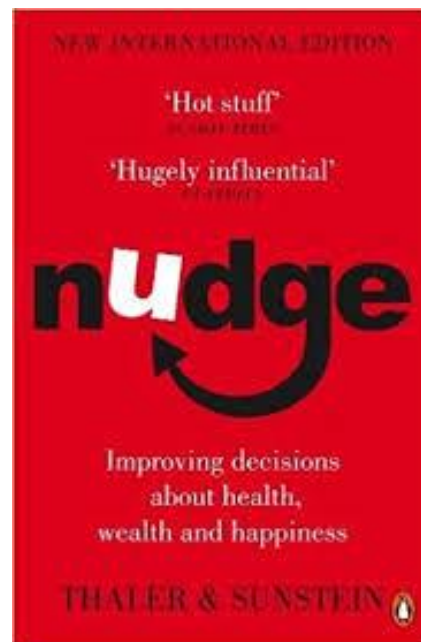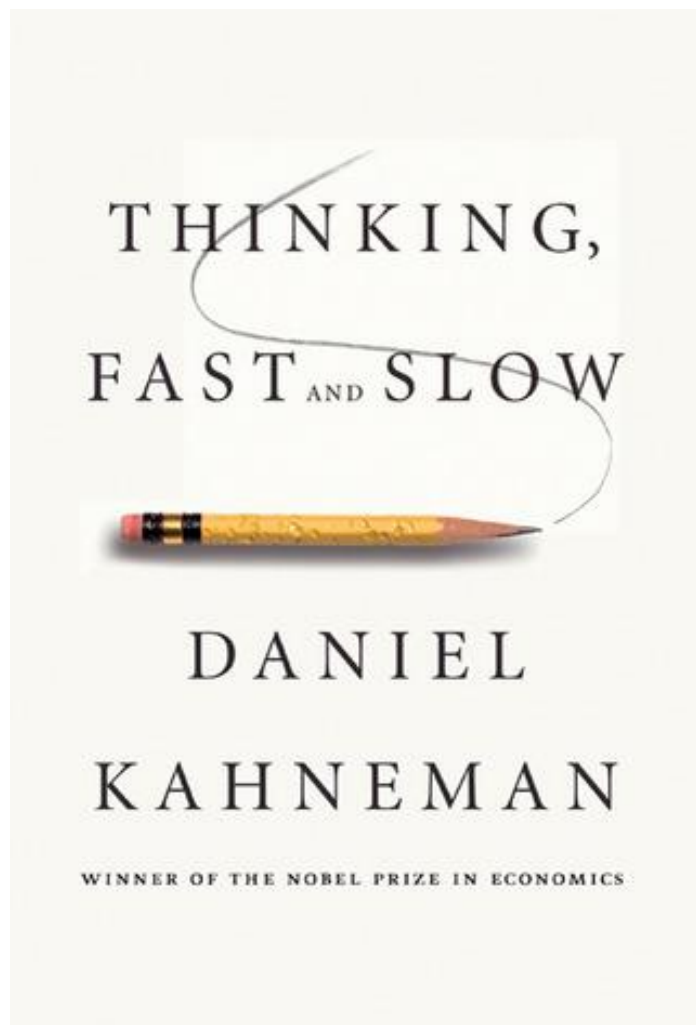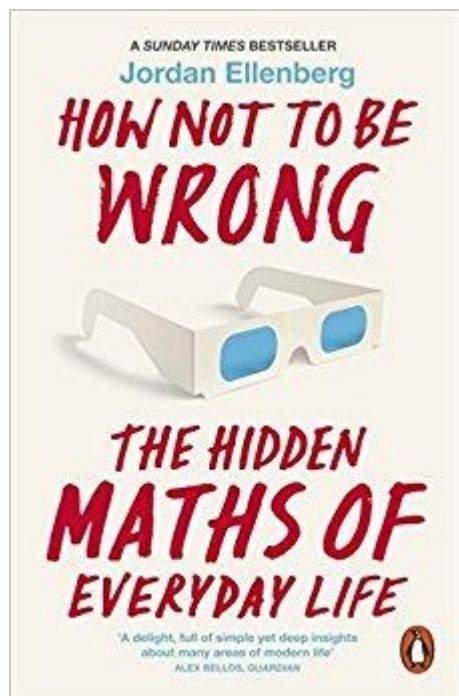- where was the problem?

Objective and possible outcomes

Objectives:

To present and understand some typical failures of the „economical" reasoning and the fallacies that persist in the „pure economic" thinking
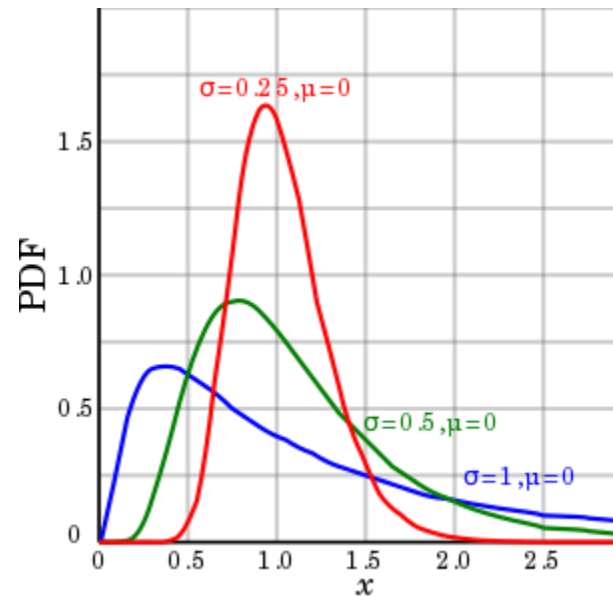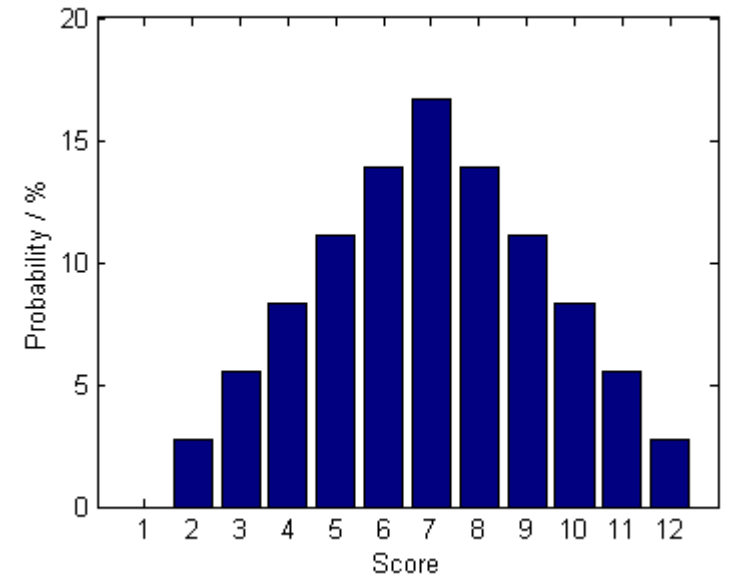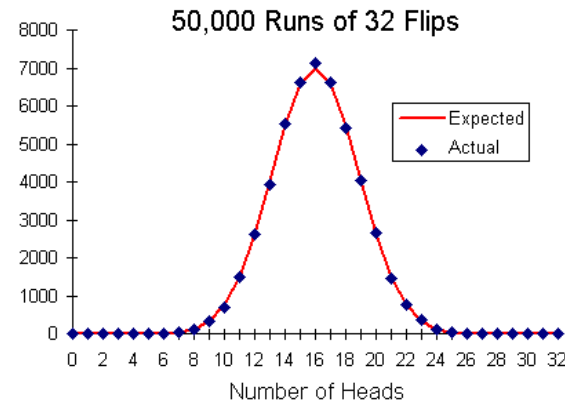
Outcomes:

Overview

1. Series
2. Averages
3. Risk avoidance
4. Non-rational behaviour
5. Forecasting

A SUNDAY TIMES BESTSELLER
Jordan Ellenberg
HOW NOT TO BE WRONG
THE HIDDEN MATHS OF EVERYDAY LIFE
'A delight, full of simple yet deep insights about many areas of modern life'
ALEX BELLOS, GUARDIAN

THINKING, FAST and SLOW
DANIEL KAHNEMAN
WINNER OF THE NOBEL PRIZE IN ECONOMICS

NEW INTERNATIONAL EDITION
'Hot stuff'
'Hugely influential'
nudge
Improving decisions about health, wealth and happiness
THALER & SUNSTEIN

The Making of Behavioral Economics
MISBEHAVING
Richard H. Thaler
Best-selling coauthor of *Nudge*
'Magnificent.' —Malcolm Gladwell

'Mindblowing … a masterpiece'
Chris Anderson, author of *The Long Tail*
'Hugely enjoyable – compelling'
Financial Times
The Black Swan
The Impact of the Highly Improbable
Nassim Nicholas Taleb

The greatest of fallacies - probability

$$f(x) = \frac{1}{x\sqrt{2\pi\sigma^2}} e^{-\frac{(\ln x - \mu)^2}{\sqrt{2\sigma^2}}}$$

But first – how risk averse you are?

Fallacy 1 - Series

Let's toss a coin

- for 100 times. How many heads? How many tails?
- for 10 times. How many heads? How many tails?
- only twice?

What if   ? Should there be for sure after that?

Is it more probable there will be tails after 2 or 3 or 4 heads?

Probability ≠ expectations

Fallacy 2 – Means and normal distribution

One full and satiated and one starving guy walk into a bar…

… on average they are O.K.

Average/mean vs. median

- example of Czech average income in 2017: € 1100

- median: € 957

The reason: lower levels are bounded by zero, high levels theoretically unlimited, but only small part of the whole

The problem called „normal distribution"

Fallacy 2 – Means and normal distribution 2

Where normal distribution works:

- height of people, test scores, athletic ability

(boundaries of the same kind on both sides of the spectrum)

Where it doesn't: wages/income, box-office performance of feature films (basically all series of naturals/natural numbers), number of violent acts commited by male teenagers

So called „long tails" and „black swans"

Fallacy 3 – Risk avoidance, loss aversion

An example from Daniel Kahnemann – cancer treatment

radiation therapy vs. operation

Radiation – long term process, side effects, safe in short term

Operation – quick, risky, full-recovery in long term

The Risk:

Would you opt for the operation?

Fallacy 3 – Risk avoidance, loss aversion

Loss aversion – how does that affect your career planning

Group work: discuss the things you are afraid of losing if you changed the course of you career.

Losing everything – would you bet?

Sunk cost: the investment one can not take back – find an example of sunk cost in your decisions in the last year.

Decision-making take: do you accept your cost as sunk?

Fallacy 4 – non rational behaviour

Ultimatum game

- make pairs – one of them gets 100 euro
- this person has to divide the amount between the two in the pair in any proportion

- the other person can refuse – then nobody gets nothing
- how much would you give

Fully rational (economically) behaviour vs. reality?

Fallacy 5 - forecasting

Hot hand fallacy?

https://www.youtube.com/watch?v=WStmFKp1x3g

If applied to weather forecasting?

- if it is a sunny day today, will there be a sunny day tomorrow?

The problem called **linear forecasting**.

Conclusion

What have we learned?

Take 5 minutes and write down the fallacy you will avoid from now on forever.