Seeing the Future without a Crystal Ball: An Introduction to Practical Forecasting and Rationality

My name is Connor Leahy

...or as you may know me

Mr “Default LibreOffice Presentation Template”

Prediction is Important

BUSINESS INSIDER

TECH | FINANCE | POLITICS | STRATEGY | LIFE | ALL

PRIME | IN

Confirmed: Dart-Throwing Chimps Beat Pundits

Vincent Fernando Nov. 17, 2009, 4:24 AM

Superforecasters

- Smart…

  ...but not greatly so
- Numerate…

  ...but not greatly so

Of Foxes and Hedgehogs

“The fox knows many things, but the hedgehog knows one big thing.”

Lesson: Try to be a fox, take different perspectives

Fermi-izing

How many piano tuners are there in Chicago?

Piano Tuners

- Chicago has maybe around ~3 mio people
- Pianos are expensive, maybe 1-2% of people own them (including institutions like music schools)

  = ~ 50.000 pianos in Chicago

Piano Tuners

- How long does it take to tune a piano? Maybe 2 hours
- How many hours a year does a piano tuner work?

  40 hours * 50 weeks = 2000 hours

  Take off 20% for travel = 1600 hours

Piano Tuners

- 50000 pianos * 2 hours = 100.000 hours of work
- 100.000 / 1600 = 62.5
- Answer : Around 63 piano tuners in Chicago

Lesson: Divide big questions into small questions

Bayesian Probability

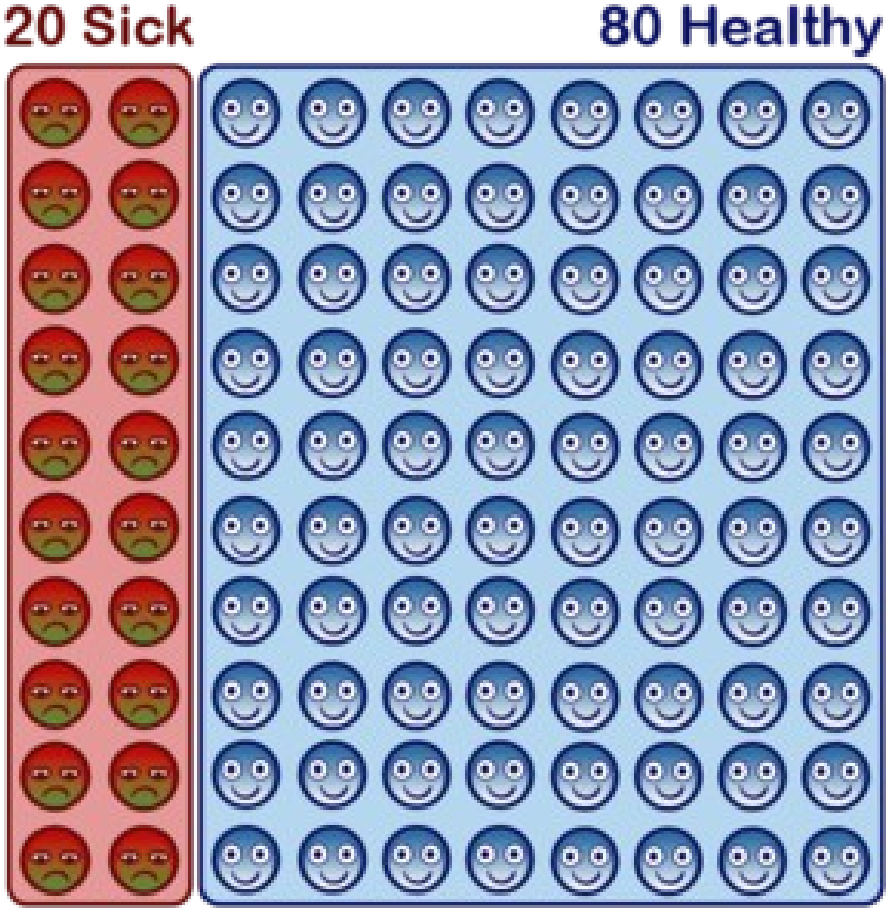
- Chance of a forty year old woman developing breast cancer in a given year: 1 in 700
- True positive rate of a mammography: 73%
- False positive rate: 12%
- What is the chance of a 40 year old woman with a positive mammography having breast cancer?

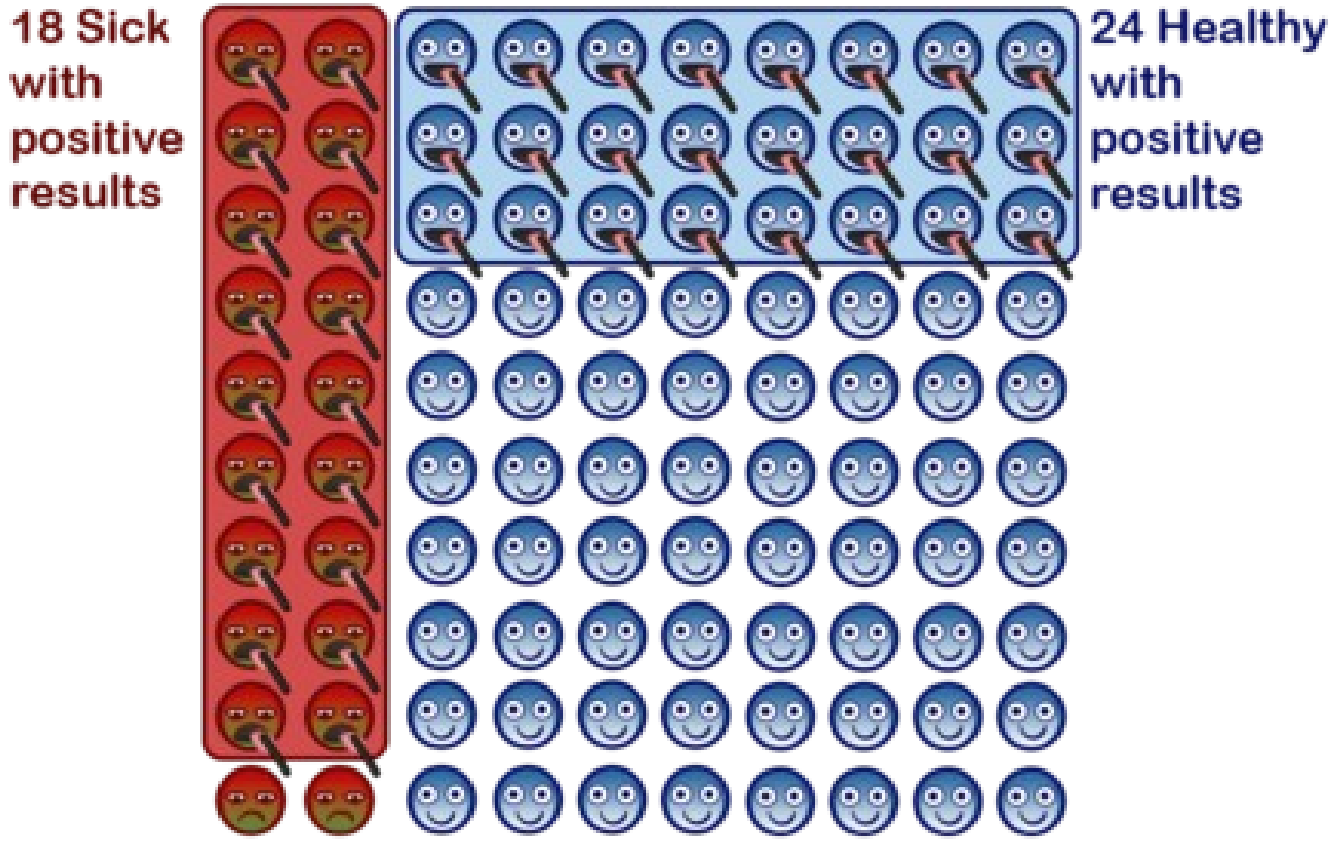
  Answer: <1%

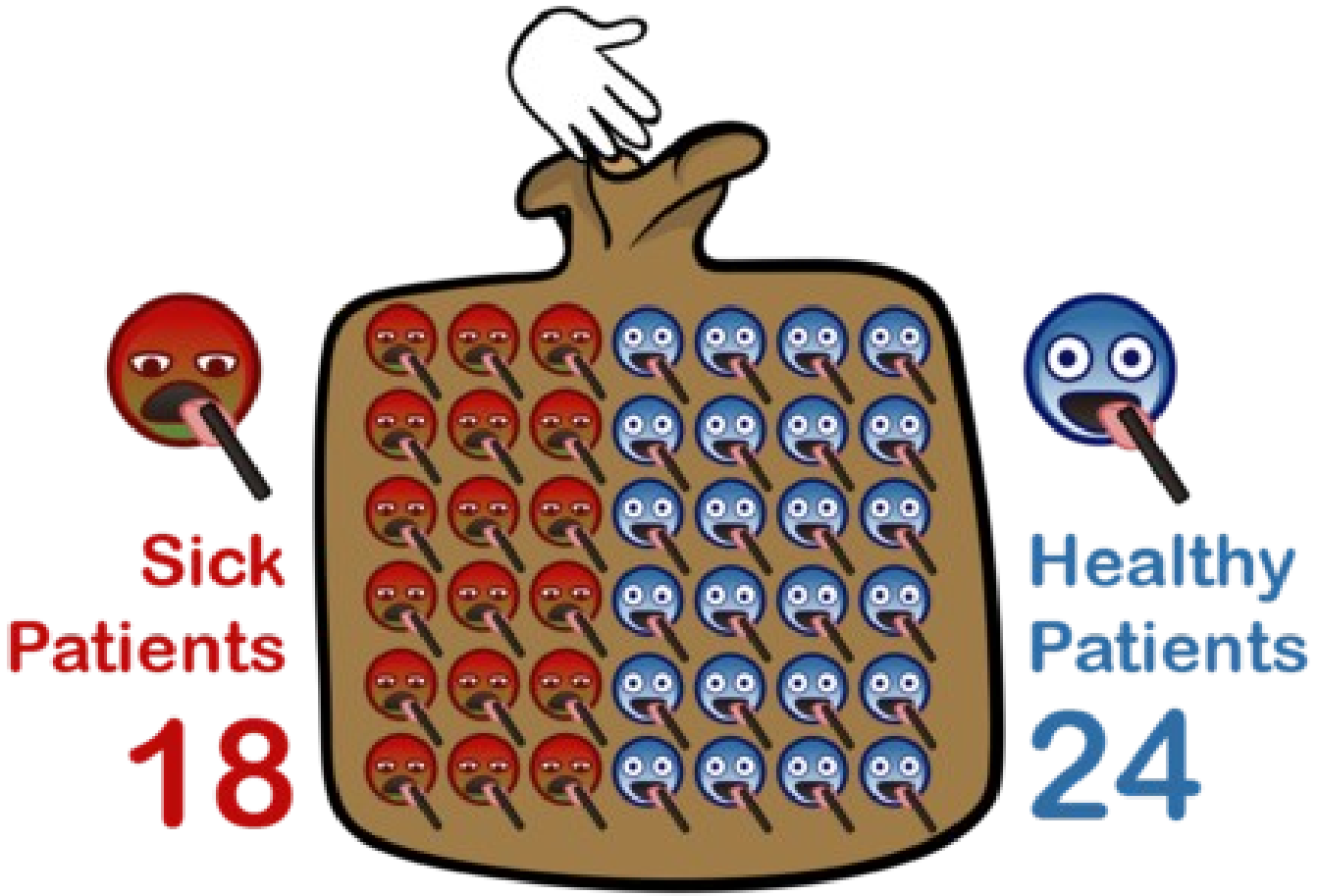
Flu Season

- 20% have flu
- 90% with the flu turn the tongue depressor black
- 30% without turn it black
- What is the chance of a student with a positive test having the flu?

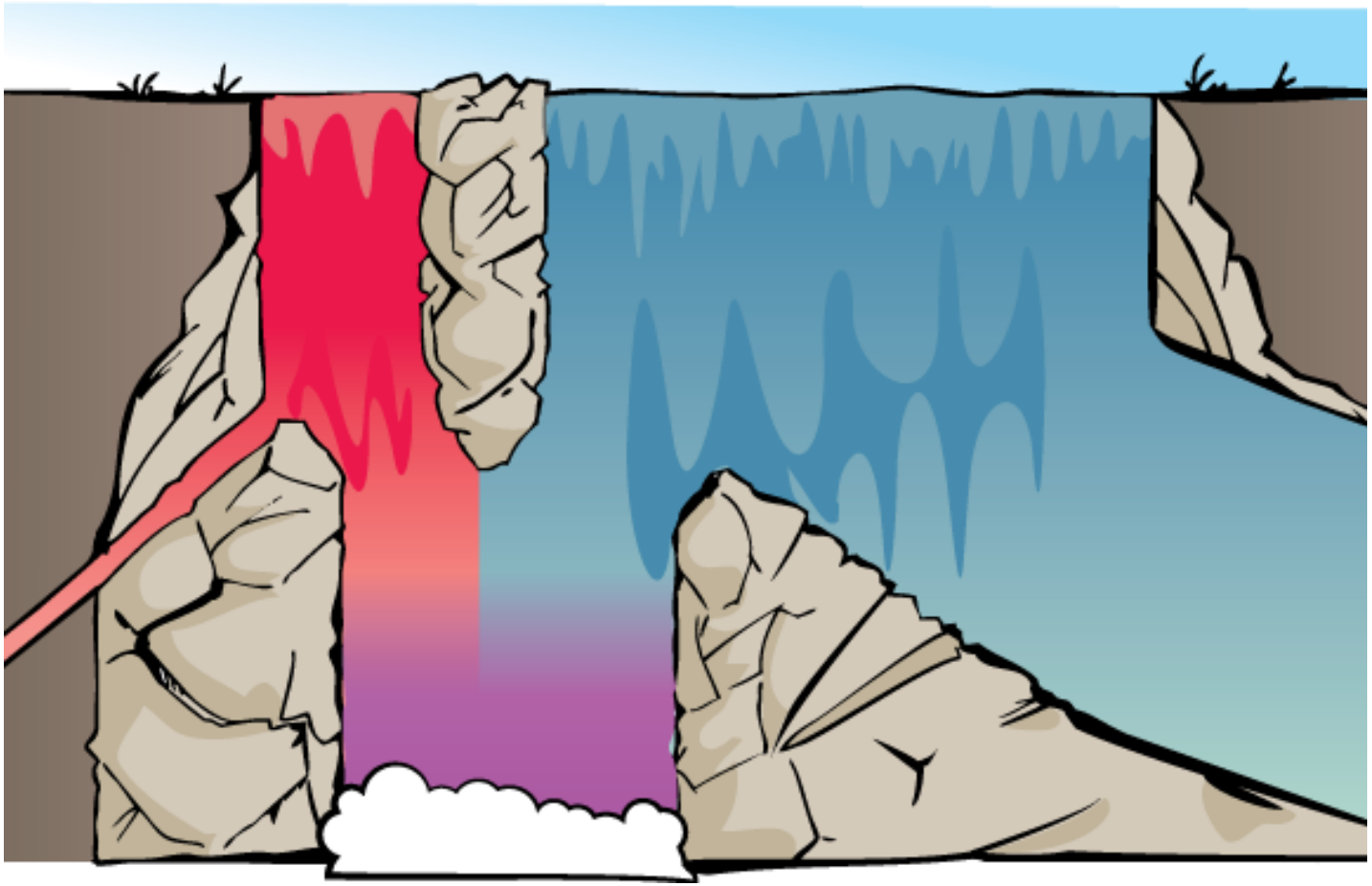
  Answer: ~43%

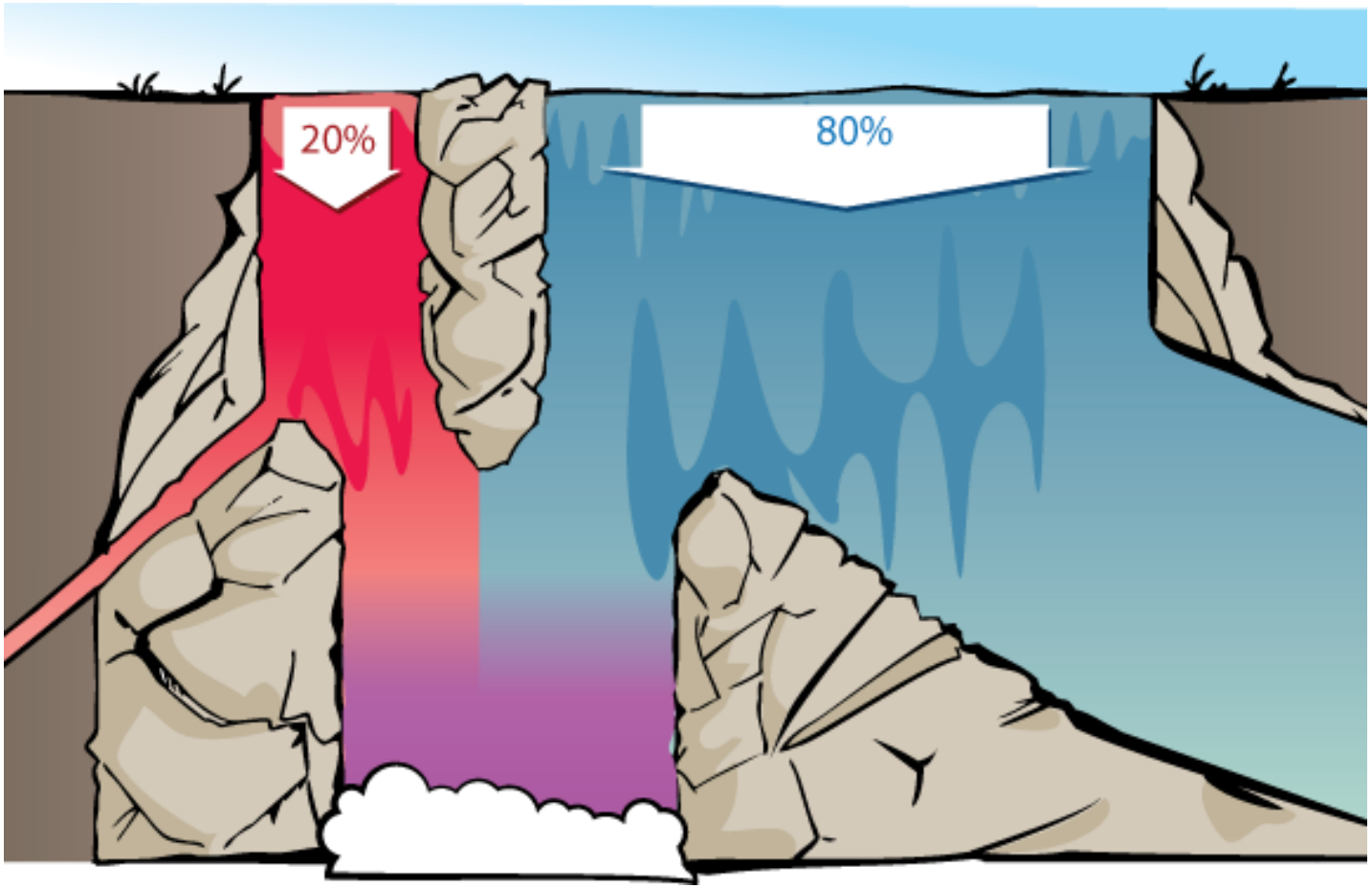

20 Sick
80 Healthy


18 Sick with positive results
24 Healthy with positive results



~43%

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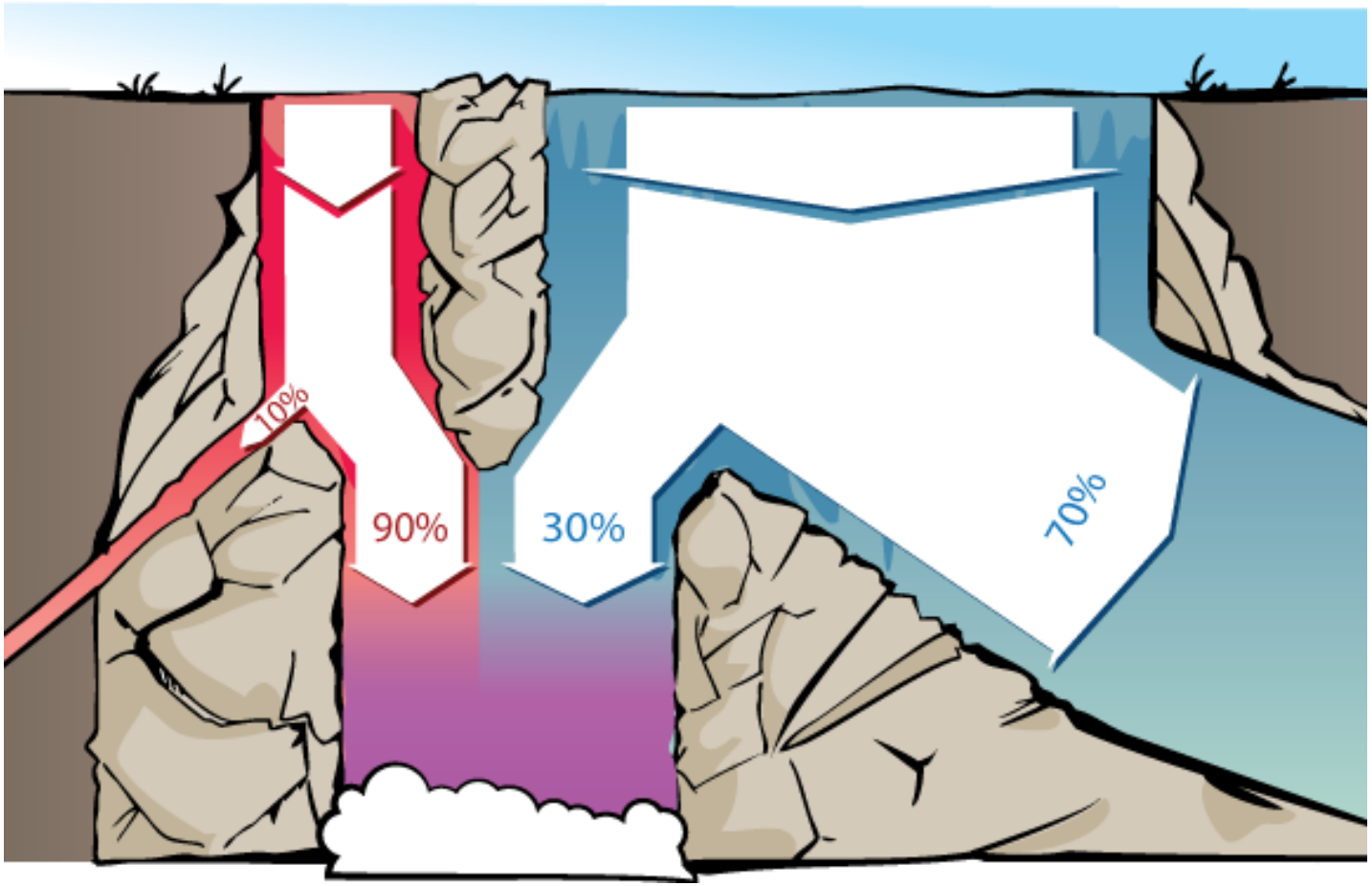
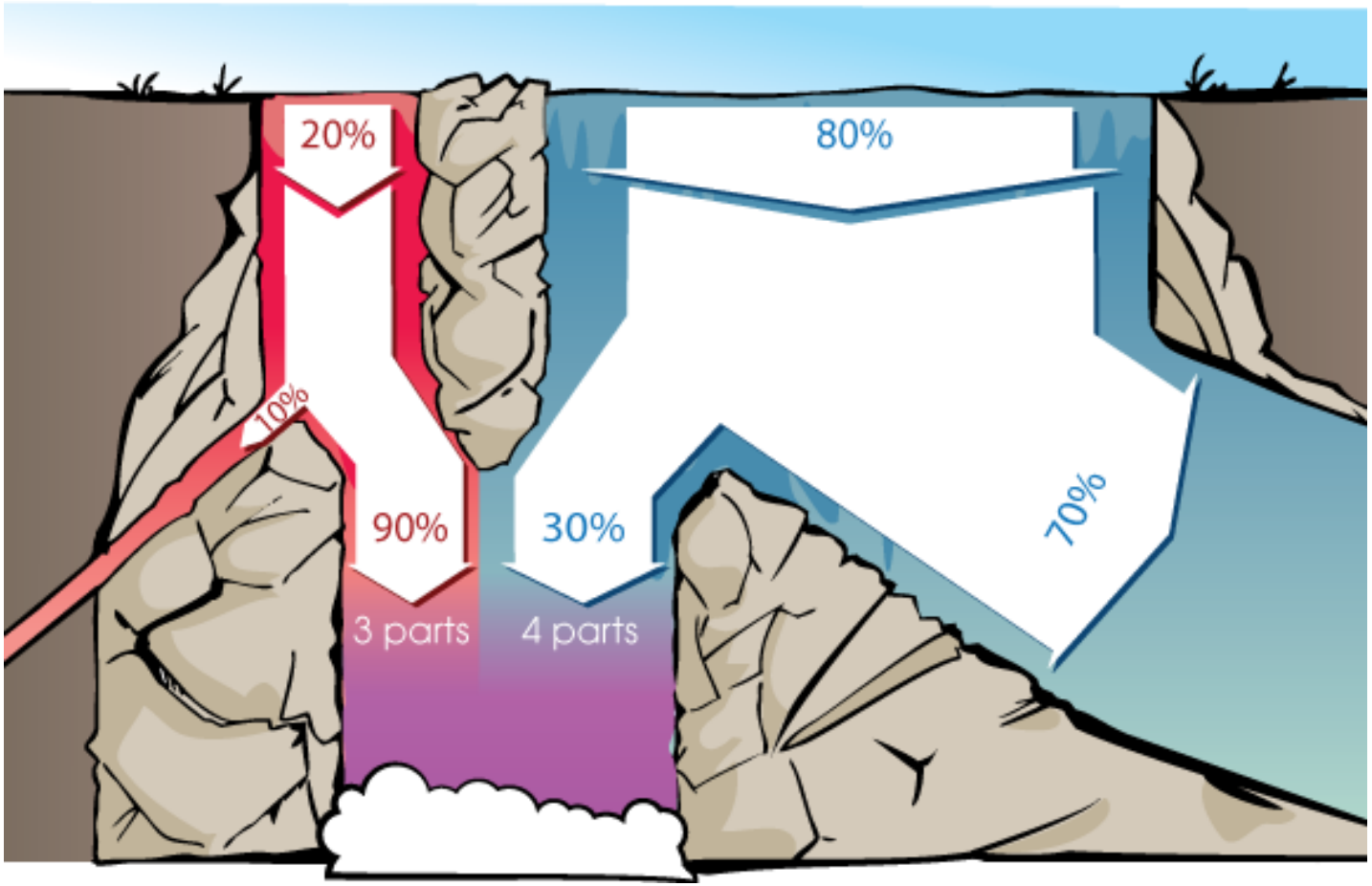
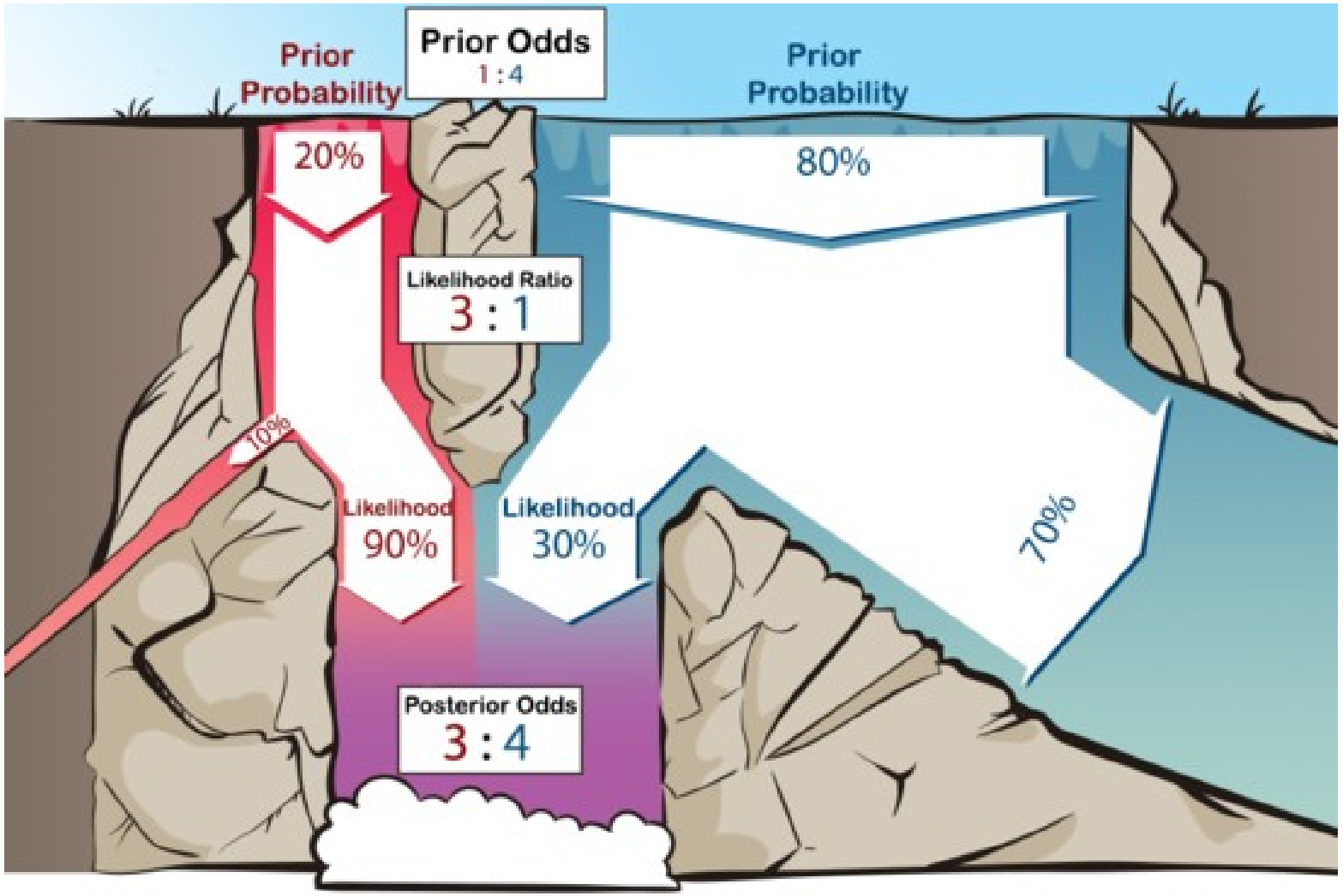
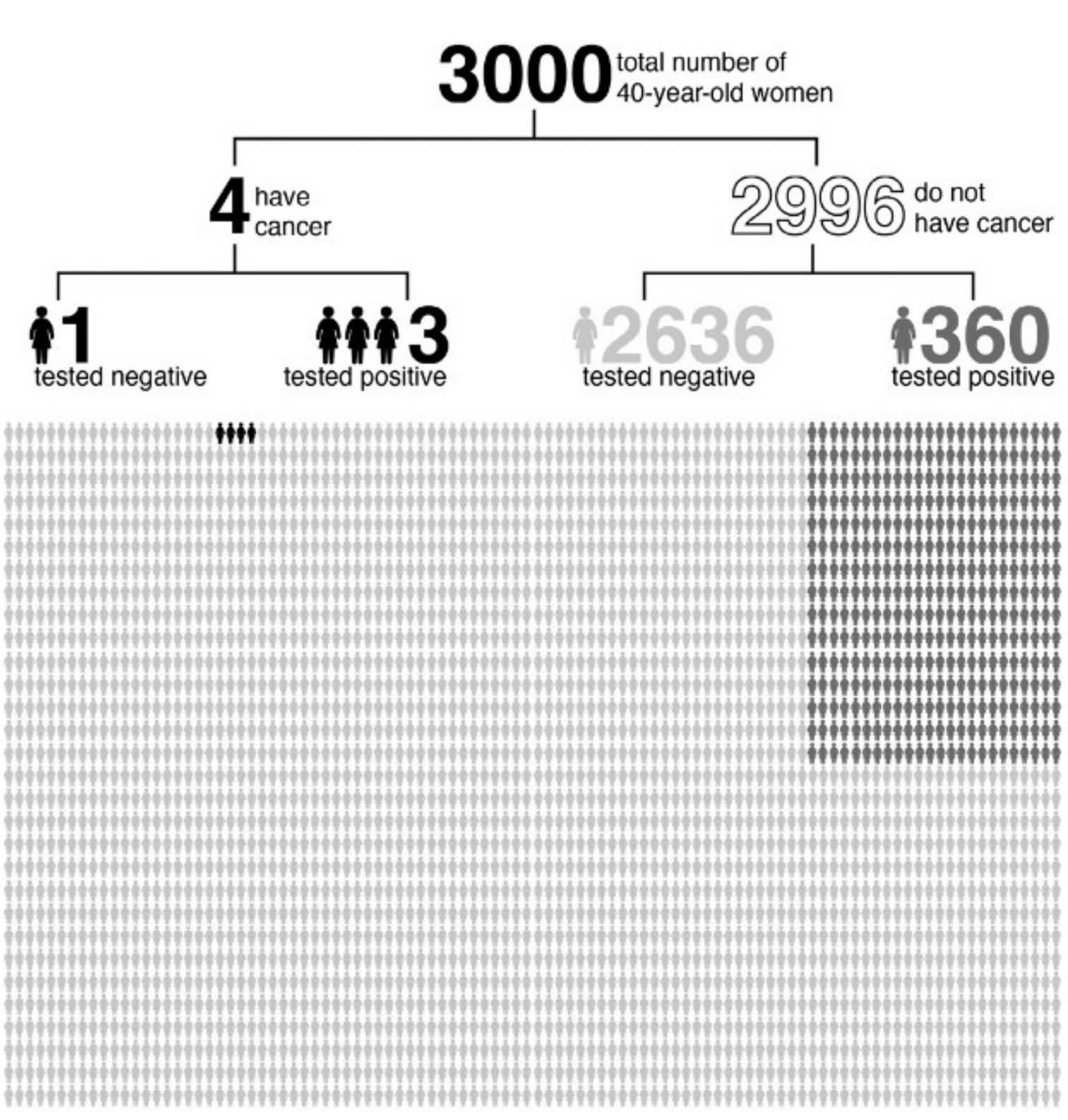

10%
90%
30%
70%


20%
80%
10%
90%
30%
70%
3 parts
4 parts



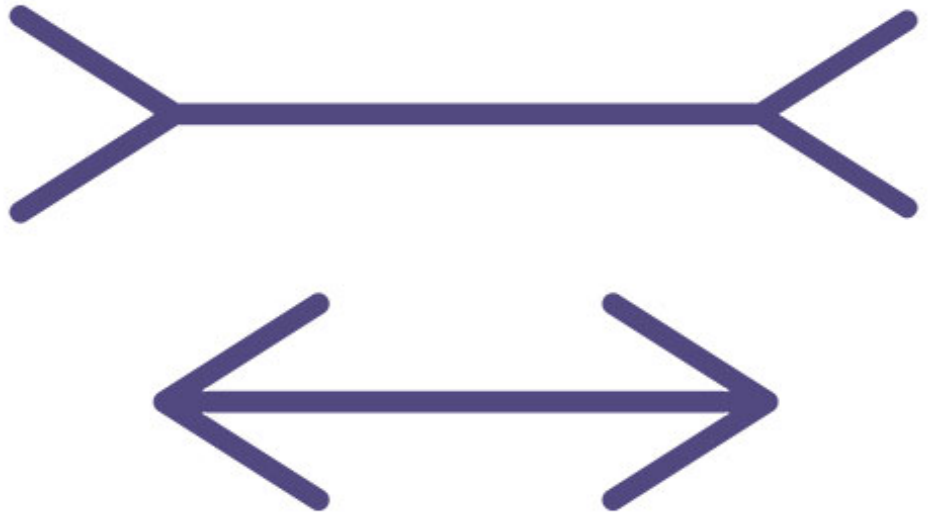
Posterior Probability = 3 / (3 + 4) = 3 / 7


3000 total number of 40-year-old women
4 have cancer
2996 do not have cancer
1 tested negative
3 tested positive
2636 tested negative
360 tested positive

Bayesian Probability

Lesson: Look at the prior odds and update your belief.

Cognitive Biases and Illusions



System 1 and 2

- System 1: Fast, emotional, effortless
- System 2: Slow, logical, effortful

Lesson: Learn when not to trust your gut and double check

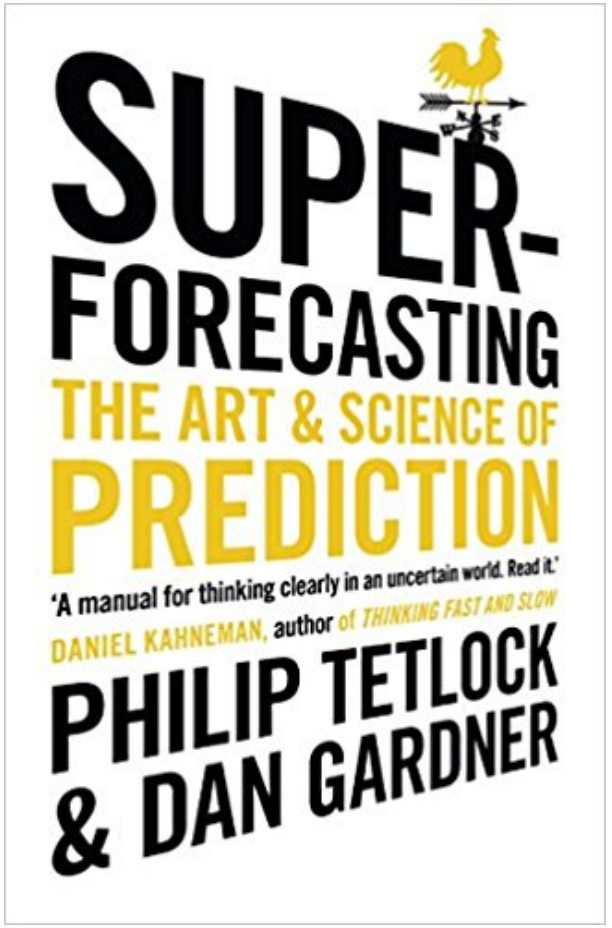
Replacing a Hard Question with an Easier Question

- Has Trump been good for the American economy?
- Where did that answer in your head come from?
- Politics is the mind killer

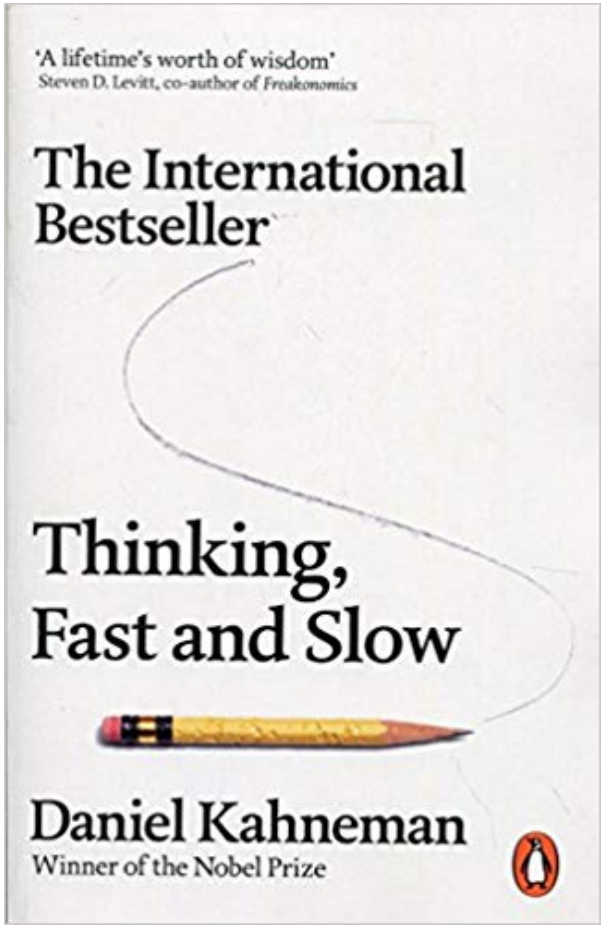
Lesson: Think before giving the first answer that comes to mind. Did you actually answer the question being asked?

Literature

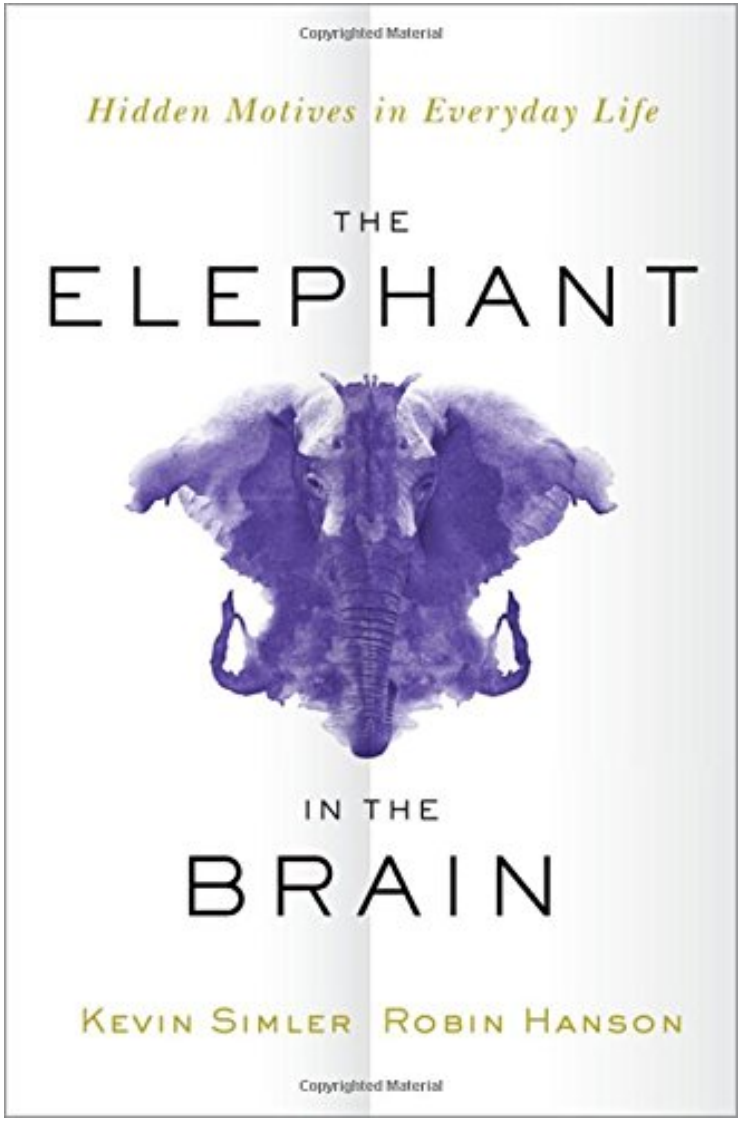
- Business is the boring stuff, economics is the good stuff
- Game Theory, Mechanism Design, Behavioral Economics, Evolutionary Psychology, Cognitive Psychology, Decision Theory, Bayesian Probability...



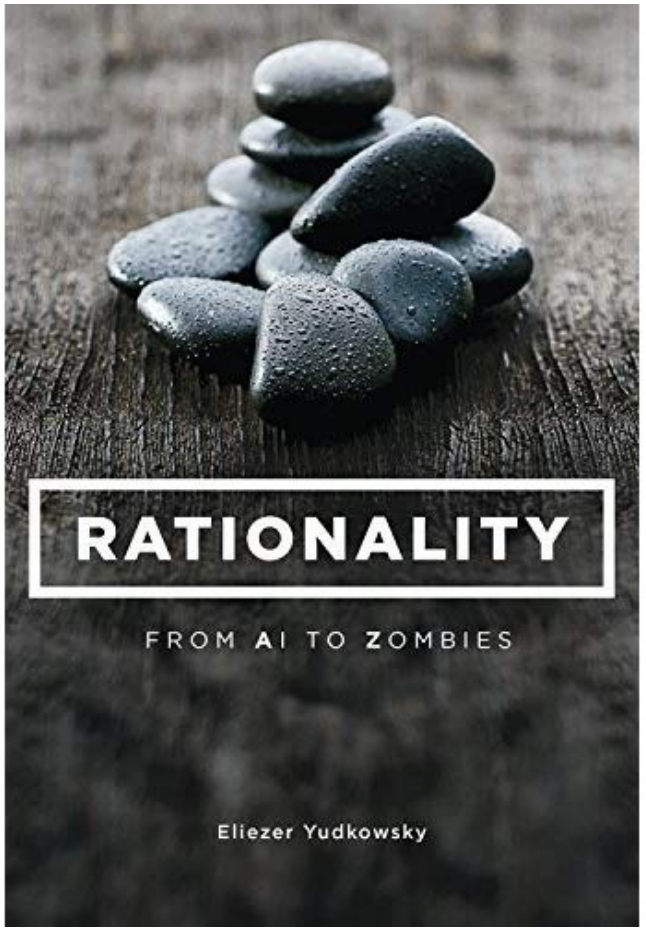
Superforecasting
By Philip Tetlock and Dan Gardner



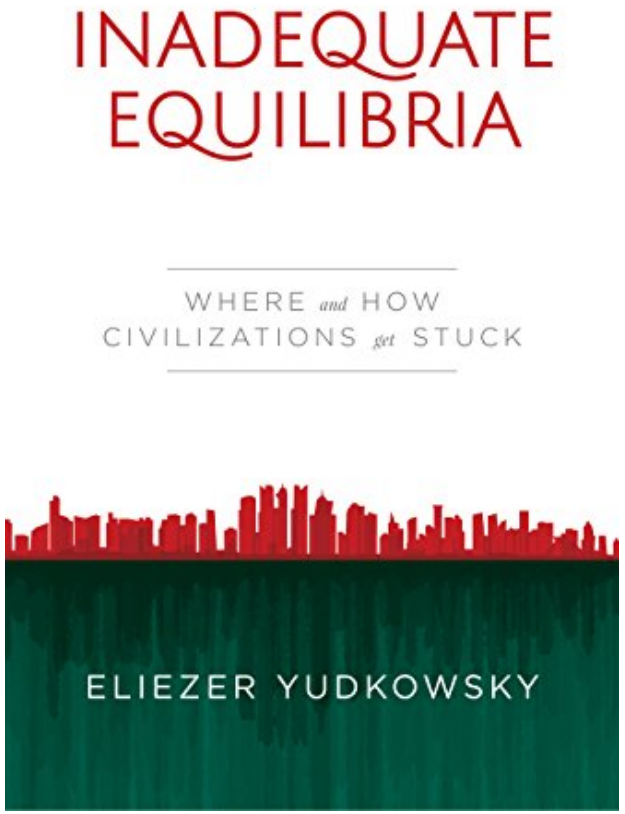
Thinking, Fast and Slow
By Daniel Kahneman



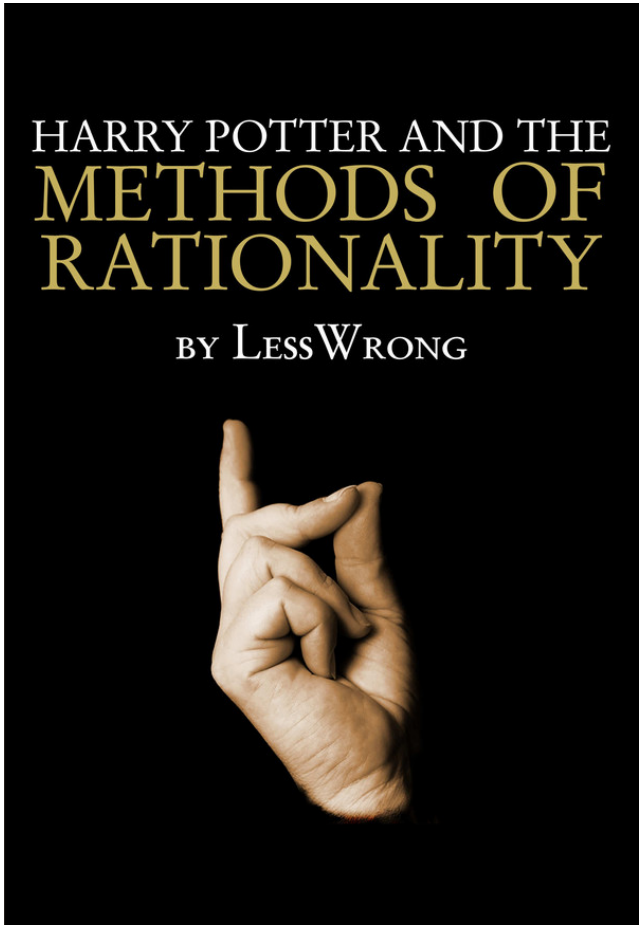
The Elephant in the Brain
By Kevin Simler and Robin Hanson



Rationality: From AI to Zombies
By Eliezer Yudkowsky



Inadequate Equilibria: Where and How Civilizations get Stuck By Eliezer Yudkowsky



Harry Potter and the Methods of Rationality By Eliezer Yudkowsky

Rationality

Rationality is the art and the science of making the best decisions to achieve your goals with whatever you have.

Thank You!

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