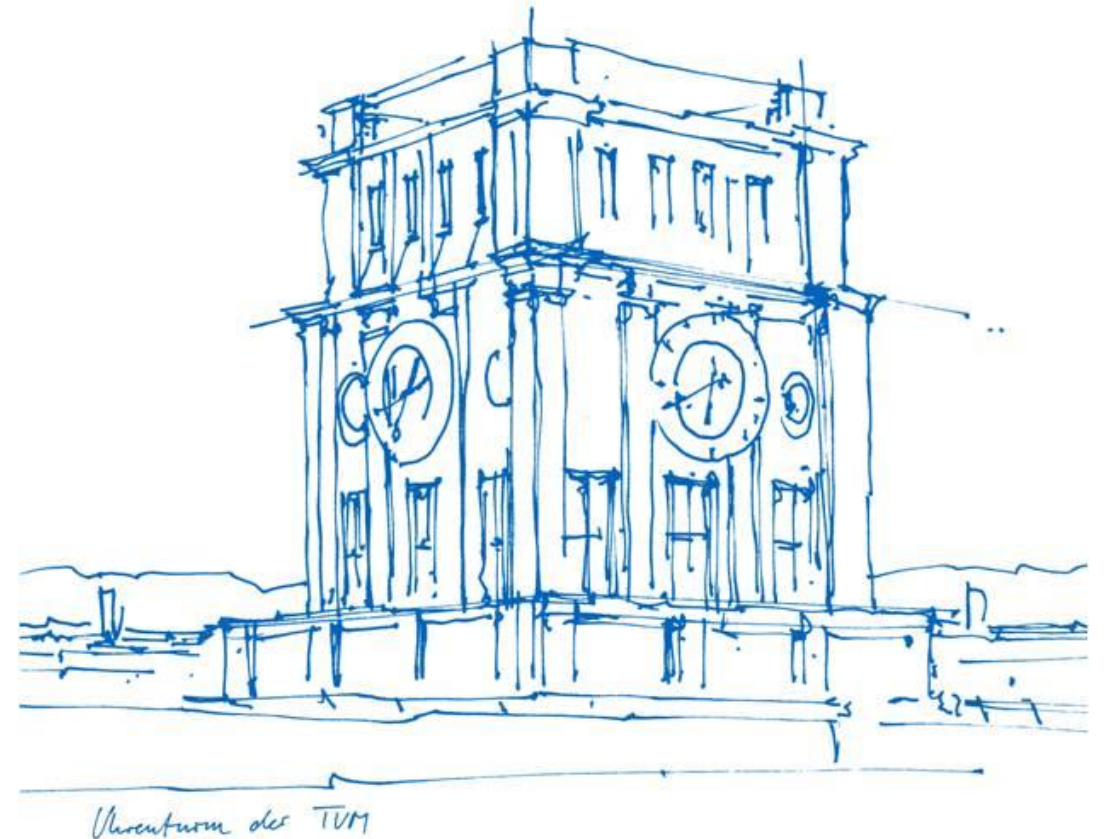


Behavioral Economics

Prof. Dr. Sebastian J. Goerg
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Technical University of Munich
TUMCS for Biotechnology and Sustainability
TUM School of Management
Department of Economics and Policy

Winter 2020/21



Course Overview

- I. What is Behavioural Economics
- II. Principles of Experimental Economics
- III. The Standard Economic Model: Consumer Theory
- IV. Reference dependence & departures from the standard model
- V. Decisions Under Risk and Uncertainty
- VI. Intertemporal Choice
- VII. Interaction with others: Game Theory
- VIII. Interaction with others: Social Preferences

Readings

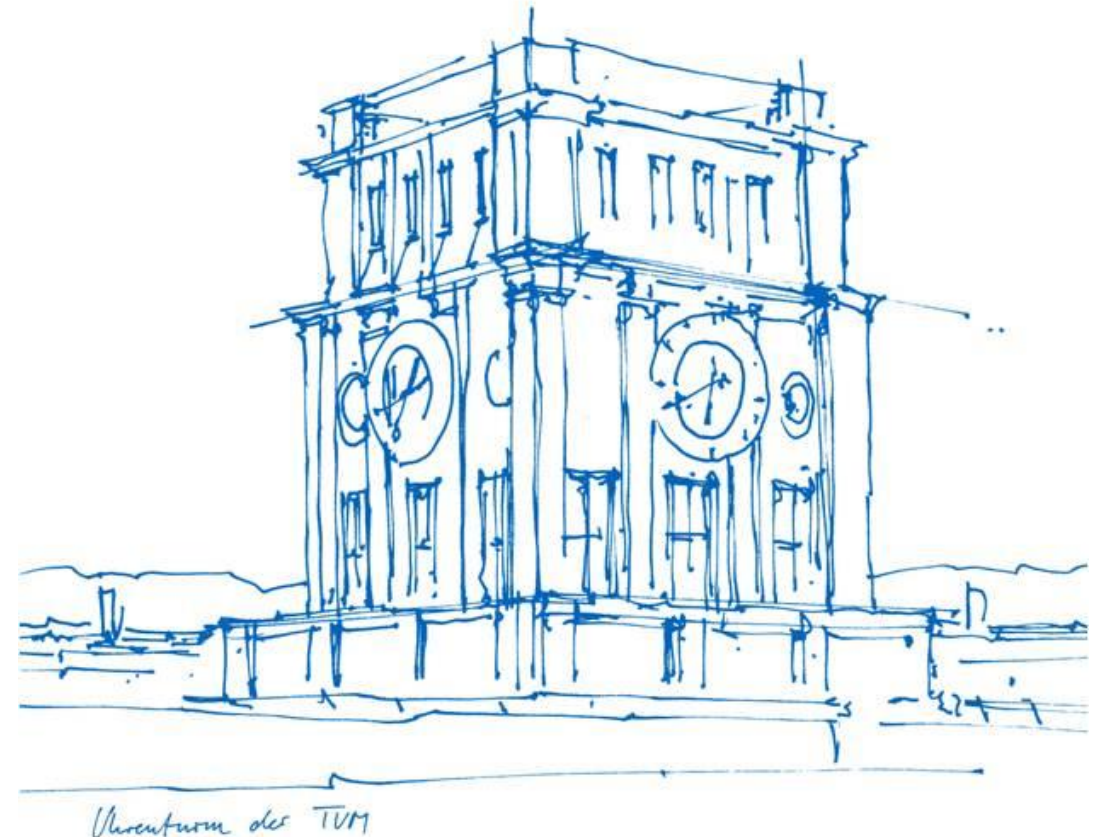
Textbooks	Academic Papers
<p>E. Cartwright (2018) Behavioral Economics (3rd ed) Routledge Advanced Texts</p>	<p>Will be announced in class and exercise</p>
Popular Books	(Policy) Reports
<p>R.H. Thaler and C.R. Sunstein (2009) Nudge: Improving Decisions About Health, Wealth, and Happiness</p> <p>D. Kahneman (2013) Thinking, Fast and Slow, Farrar, Straus and Giroux</p> <p>Dan Ariely (2010) Predictably Irrational, Revised and Expanded Edition: The Hidden Forces That Shape Our Decisions</p>	<p>BE Guides https://www.behavioraleconomics.com</p>

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The standard economic model

The standard economic model assumes people are

1. Rational – they do not make systematic mistakes.
2. Selfish – they care only about themselves.

The standard economic model is a natural *starting point* for modeling economic behavior.

Classroom Experiments

Experiment 1

Experiment: Bill

Bill is 34 years old. He is intelligent, but unimaginative, compulsive, and generally lifeless. In school, he was strong in mathematics but weak in social studies and humanities.

Rank the following statements from most probable to least probable

Bill is a physician who plays poker for a hobby

Bill is an accountant

Bill is an architect

Bill is an accountant who plays jazz for a hobby

Bill surfs for a hobby

Bill is a reporter

Bill plays jazz for a hobby

Bill climbs mountains for a hobby



Bill is 34 years old. He is intelligent, but unimaginative, compulsive, and generally lifeless. In school, he was strong in mathematics but weak in social studies and humanities.

Rank the following statements from most probable to least probable

1 Bill is a physician who plays poker for a hobby

2 Bill is an accountant

3 Bill is an architect

4 Bill is an accountant who plays jazz for a hobby

5 Bill surfs for a hobby

6 Bill is a reporter

7 Bill plays jazz for a hobby

8 Bill climbs mountains for a hobby



Experiment 2

Experiment: 3 Simple Questions

Please follow the last link in Zoom's chat box.

You should be seeing a picture with baseball bat and a ball.

Please answer these questions as quickly as possible!!!



Question 1



A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball.

How much does the ball cost? _____ cents



Question 2



It takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?

___minutes



Question 3



In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

___days



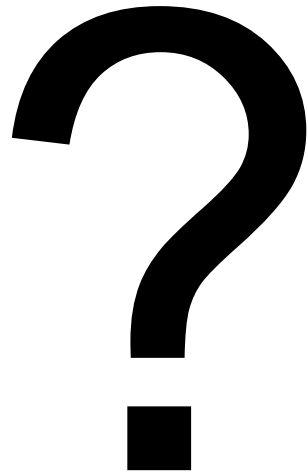
Experiment 3

Blinking Lights

Try to guess which light is going to blink in every round!



Round 1



GREEN



Round 2



RED



Round 3



GREEN



Round 4



RED



Round 5



RED



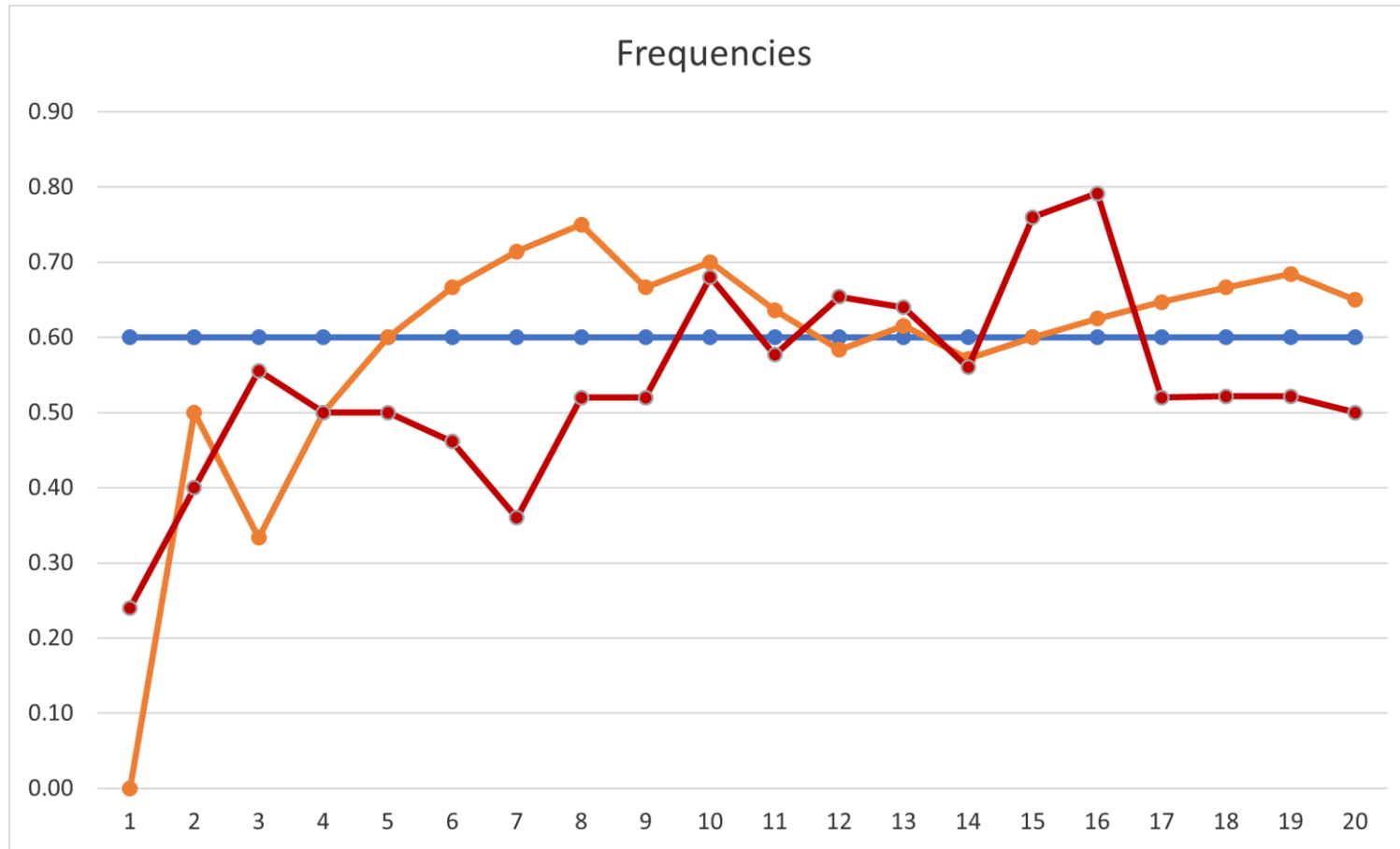
Round 6

The game continued for 20 rounds. The underlying blinking probability was 60% for the red light (left) and 40% for the green light (right).

Results: Blinking Lights

		ROLL OUTCOME																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DICE OUTCOME																					
	LEFT		1		1	1	1	1	1		1			1		1	1	1	1	1	
	RIGHT	1		1						1		1	1		1						1
STUDENTS																					
	LEFT RED	6	10	15	13	13	12	9	13	13	17	15	17	16	14	19	19	13	12	12	12
	RIGHT GREEN	19	15	12	13	13	14	16	12	12	8	11	9	9	11	6	5	12	11	11	12

Results: Blinking Lights



- **Blue:** underlying probability of blinking red
 - Fixed at 60%, so red is more likely than green
- **Orange:** aggregate frequency of the die favouring red
 - Converging at 60% by the Law of Large Numbers
- **Red:** observed proportion of students thinking that the Red light would blink next
 - Converges at 60% but is this the right strategy?

Results: Blinking Lights

Often, when repeatedly asked to predict an event subjects match the probability of the event.

But is this optimal if you want to maximize the number of correct guesses?

Results: Blinking Lights

Often, when repeatedly asked to predict an event subjects match the probability of the event.

But is this optimal if you want to maximize the number of correct guesses?

NO!

If your objective is to maximize the number of correct guesses, you should always predict the more likely outcome!

Results: Blinking Lights

Probability matching

A decision strategy in which predictions for events are proportional to the base rate of the event. Often it is considered a mistake if the objective is to maximize the number of correct guesses

Experiment: Bill

*Bill is 34 years old. He is intelligent, but **unimaginative**, compulsive, and generally **lifeless**. In school, he was strong in **mathematics** but weak in social studies and humanities.*

(Tversky and Kahneman, 1983)

Rank the following statements from most probable to least probable

Bill is a physician who plays poker for a hobby

*Bill is an **accountant***

Bill is an architect

*Bill is an **accountant** who plays jazz for a hobby*

Bill surfs for a hobby

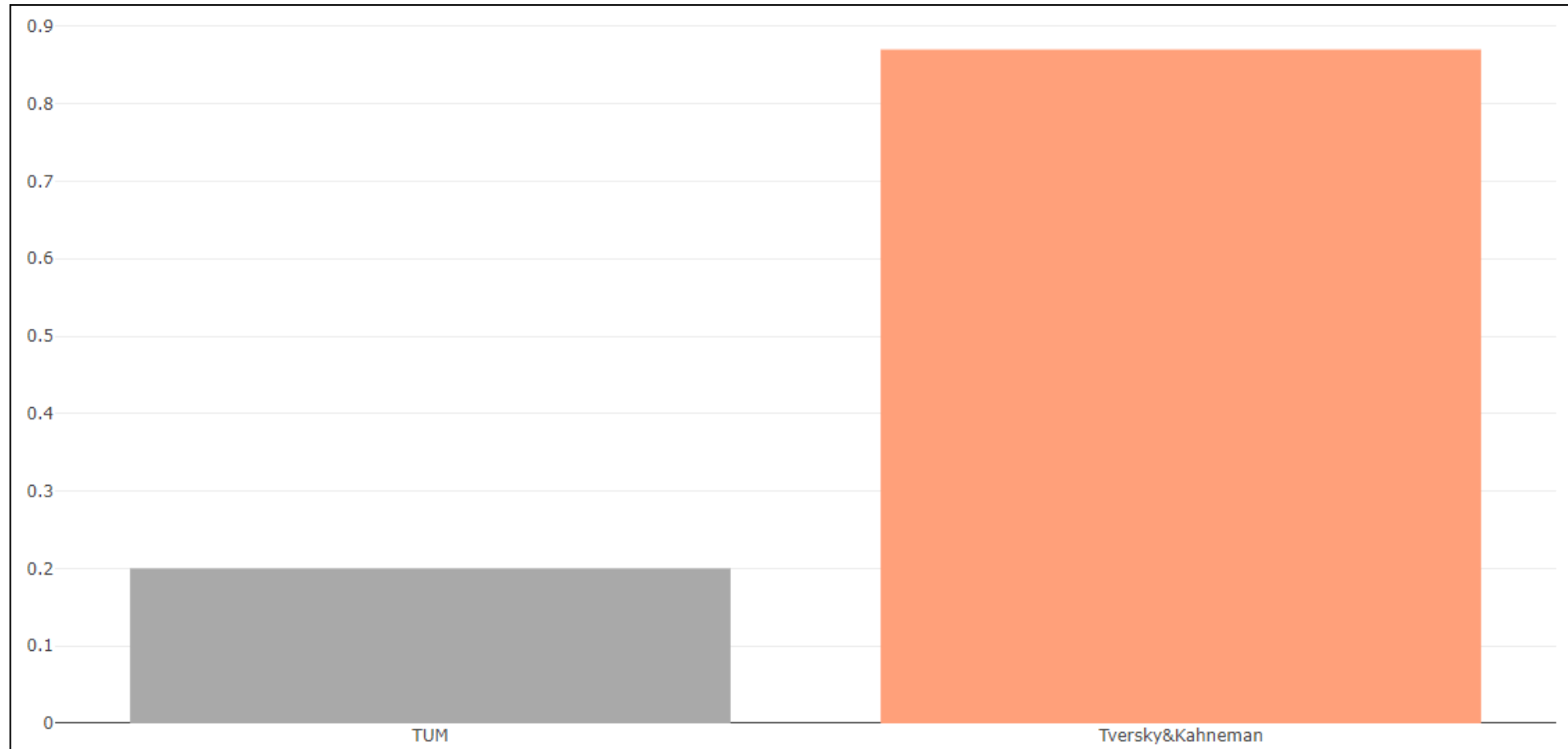
Bill is a reporter

Bill plays jazz for a hobby

Bill climbs mountains for a hobby

Experiment: Bill (results)

Conjunction fallacy rate with TUM students (left) and with students from Tversky&Kahneman's paper (right)



Experiment: Bill (results)

Bill is 34 years old. He is intelligent, but unimaginative, compulsive, and generally lifeless. In school, he was strong in mathematics but weak in social studies and humanities.
(Tversky and Kahneman, 1983)

Rank the following statements from most probable to least probable

Bill is a physician who plays poker for a hobby

Bill is an accountant (A)

Bill is an architect

Bill is an accountant who plays jazz for a hobby (AJ)

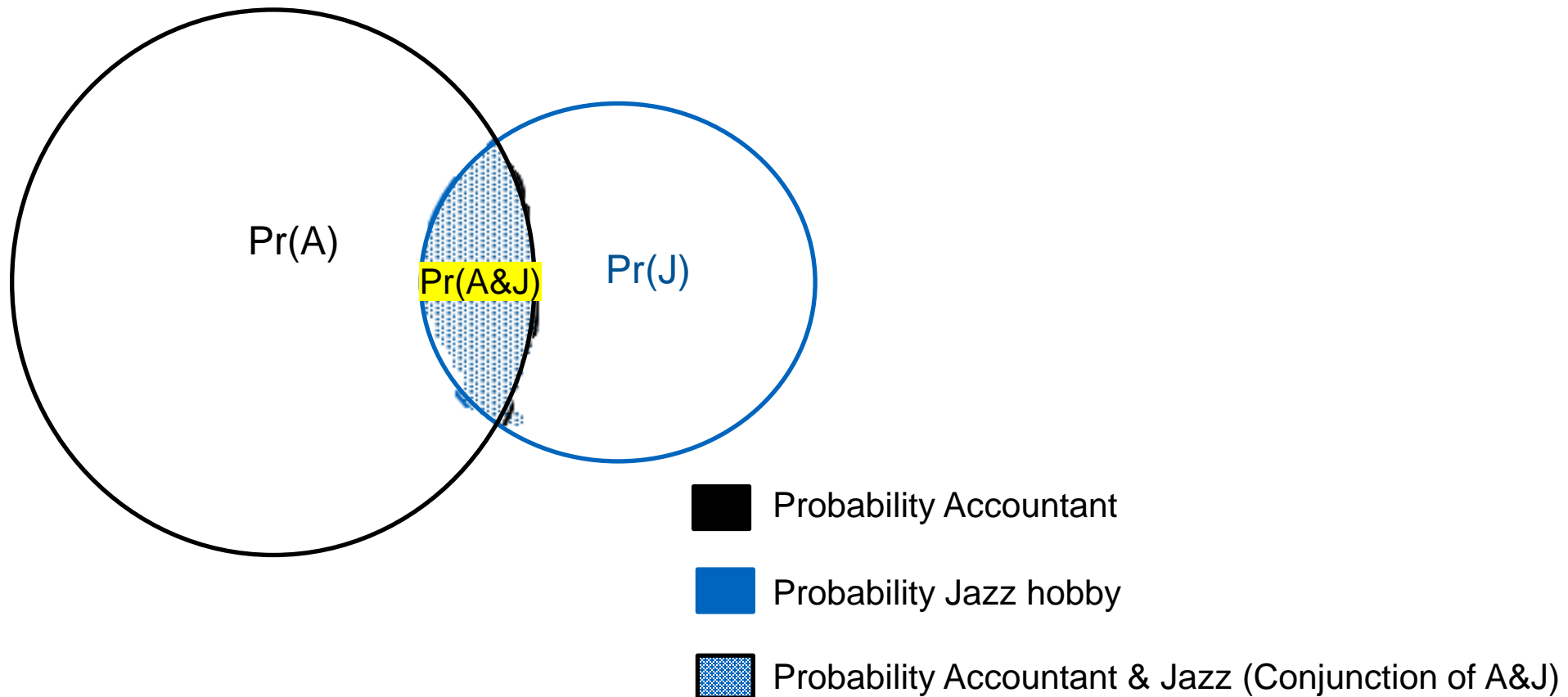
Bill surfs for a hobby

Bill is a reporter

Bill plays jazz for a hobby (J)

Bill climbs mountains for a hobby

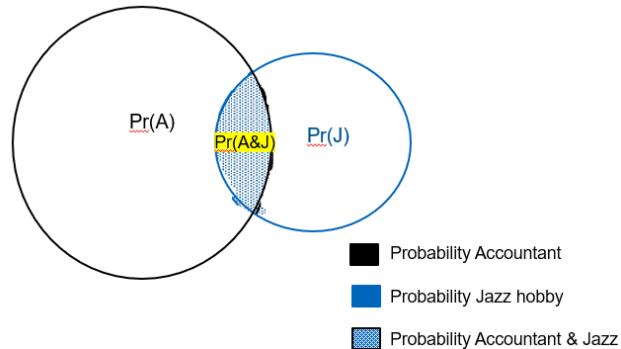
Conjunction Fallacy



Conjunction Fallacy

Conjunction Fallacy

A fallacy that occurs when two specific conditions are jointly evaluated as more probable than a single one. It is a mistake if the probability of two events occurring **together** (in "conjunction") is less than or equal to the probability of one occurring alone



$$P(A \cap J) \leq P(A)$$

And

$$P(A \cap J) \leq P(J)$$

But, very often:

$$P(J) < P(A \cap J) < P(A)$$

Experiment: Bill (results)

$$\Pr(A) > \Pr(A \cap J) > \Pr(J)$$



Amos Tversky
Daniel Kahneman

Indeed:
87% of participants exhibited this ranking!
Is this ranking possible?

Experiment: Bill (results)

Psychological Review

VOLUME 90 NUMBER 4 OCTOBER 1983

Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment

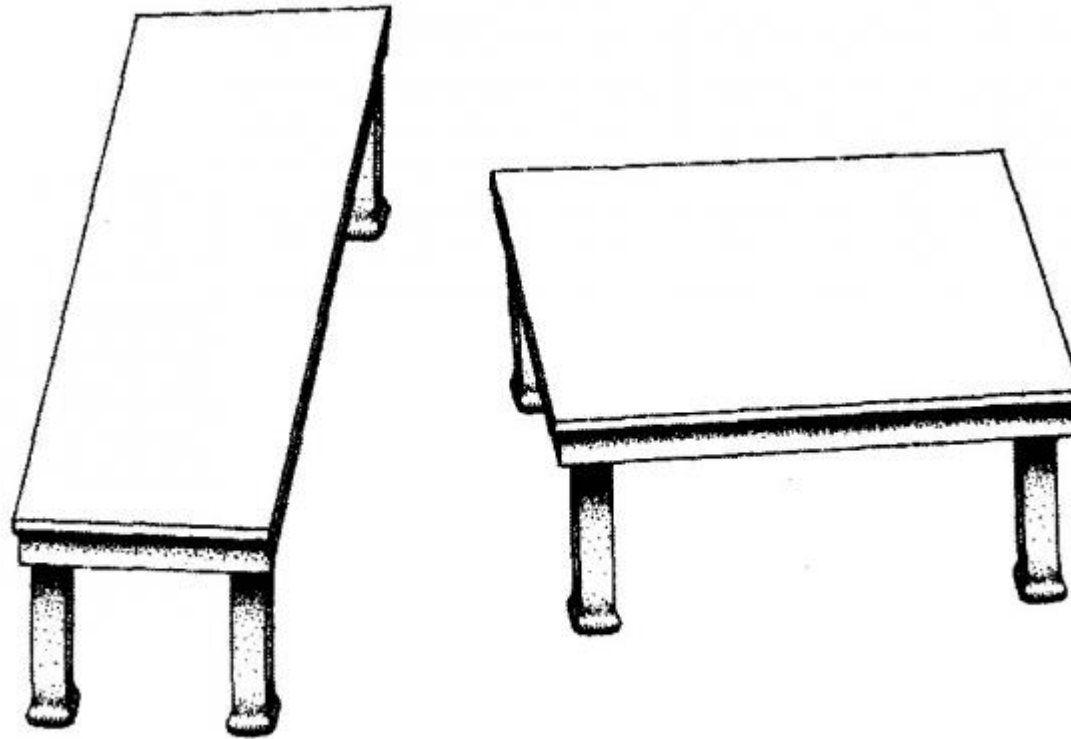
Amos Tversky
Stanford University

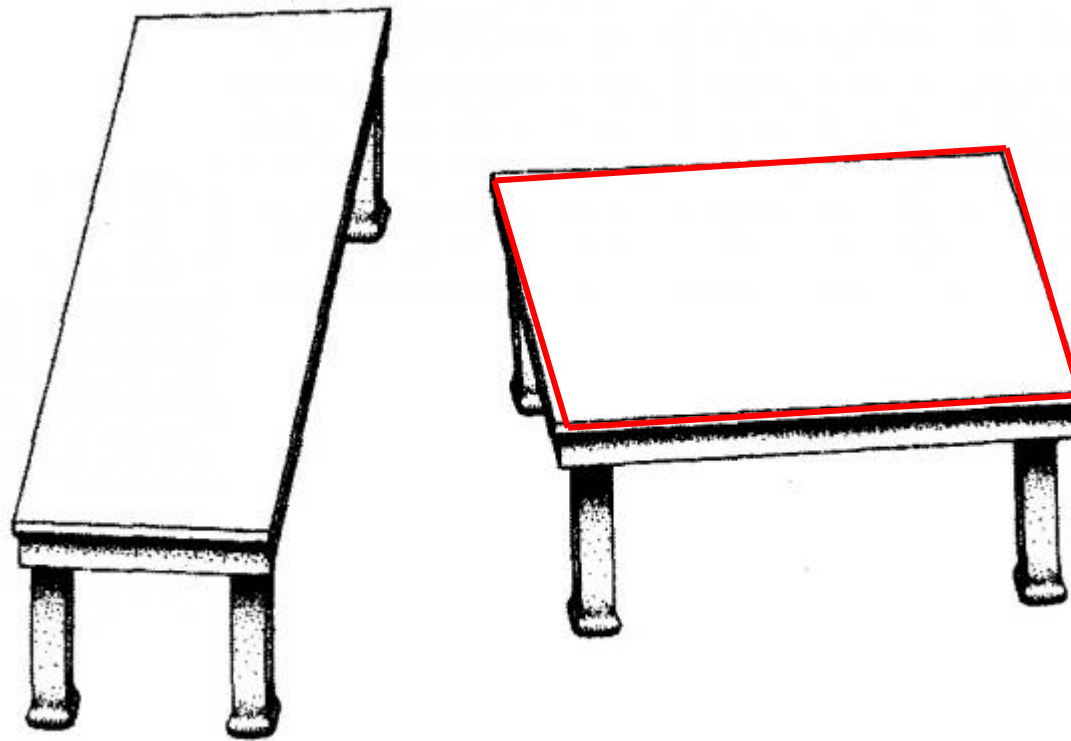
Daniel Kahneman
University of British Columbia, Vancouver,
British Columbia, Canada

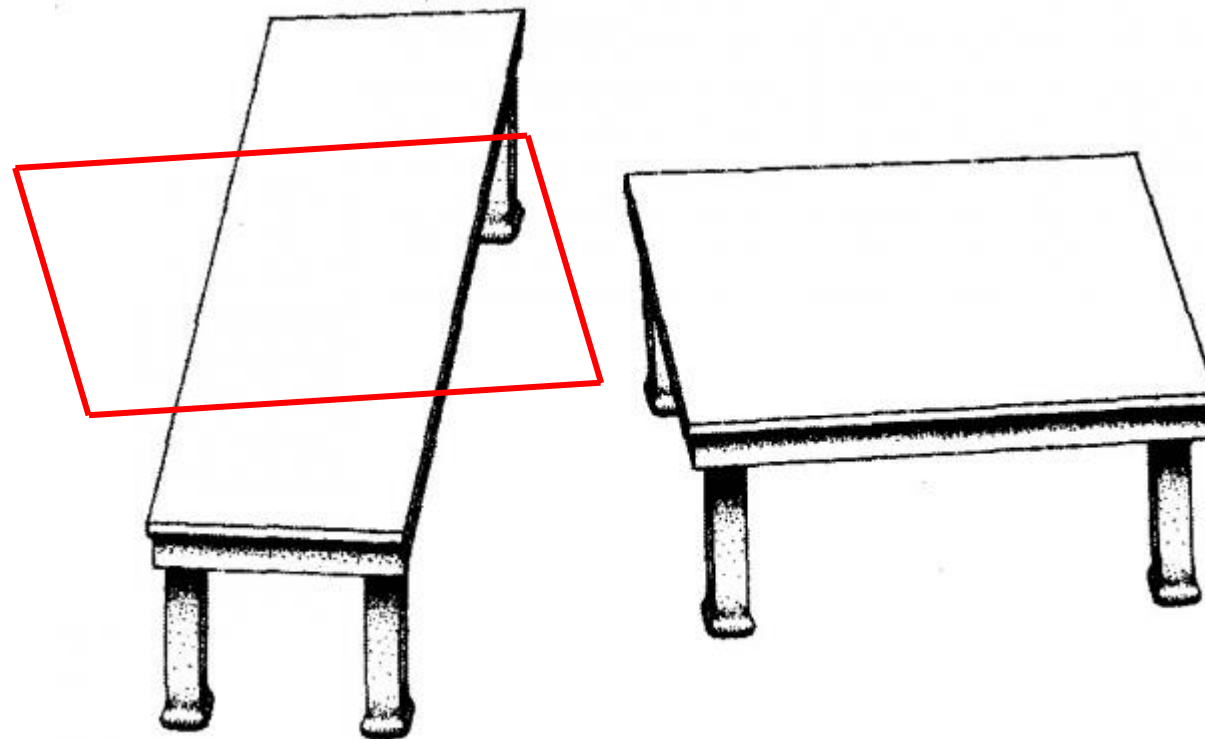
Perhaps the simplest and the most basic qualitative law of probability is the conjunction rule: The probability of a conjunction, $P(A\&B)$, cannot exceed the probabilities of its constituents, $P(A)$ and $P(B)$, because the extension (or the possibility set) of the conjunction is included in the extension of its constituents. Judgments under uncertainty, however, are often mediated by intuitive heuristics that are not bound by the conjunction rule. A conjunction can be more representative than one of its constituents, and instances of a specific category can be easier to imagine or to retrieve than instances of a more inclusive category. The representativeness and availability heuristics therefore can make a conjunction appear more probable than one of its constituents. This phenomenon is demonstrated in a variety of contexts including estimation of word frequency, personality judgment, medical prognosis, decision under risk, suspicion of criminal acts, and political forecasting. Systematic violations of the conjunction rule are observed in judgments of lay people and of experts in both between-subjects and within-subjects comparisons. Alternative interpretations of the conjunction fallacy are discussed and attempts to combat it are explored.

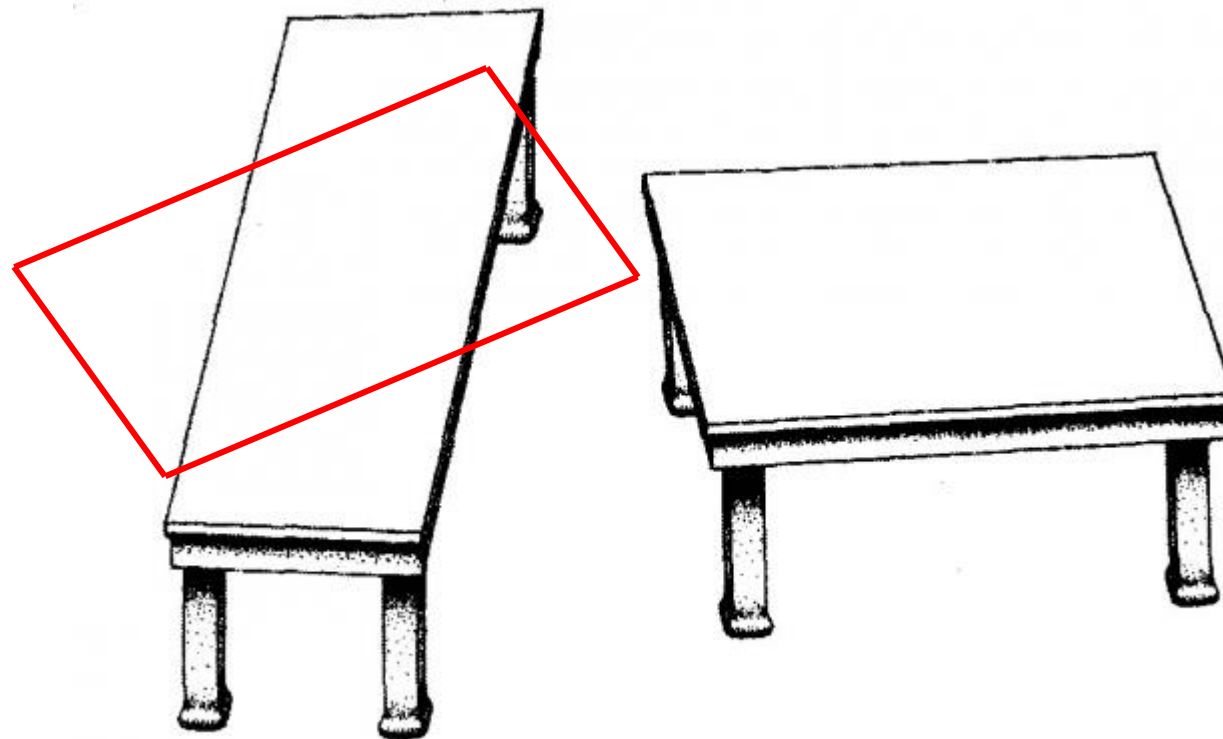


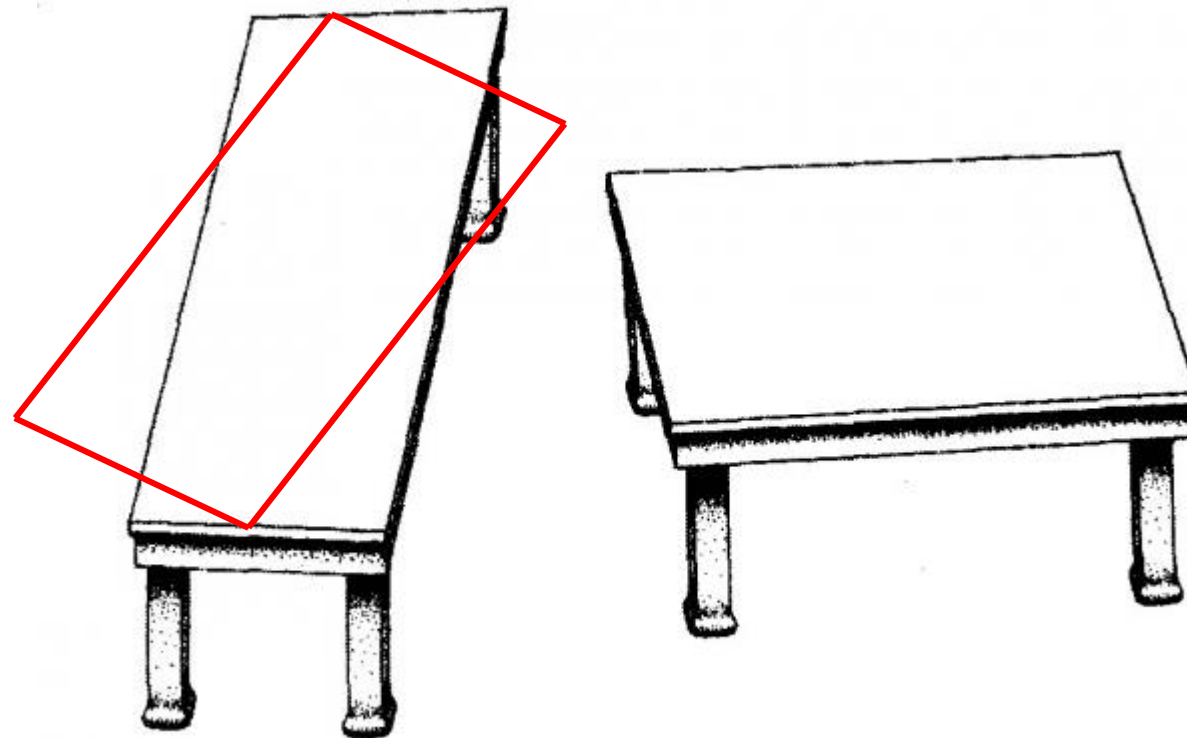
Amos Tversky
Daniel Kahneman



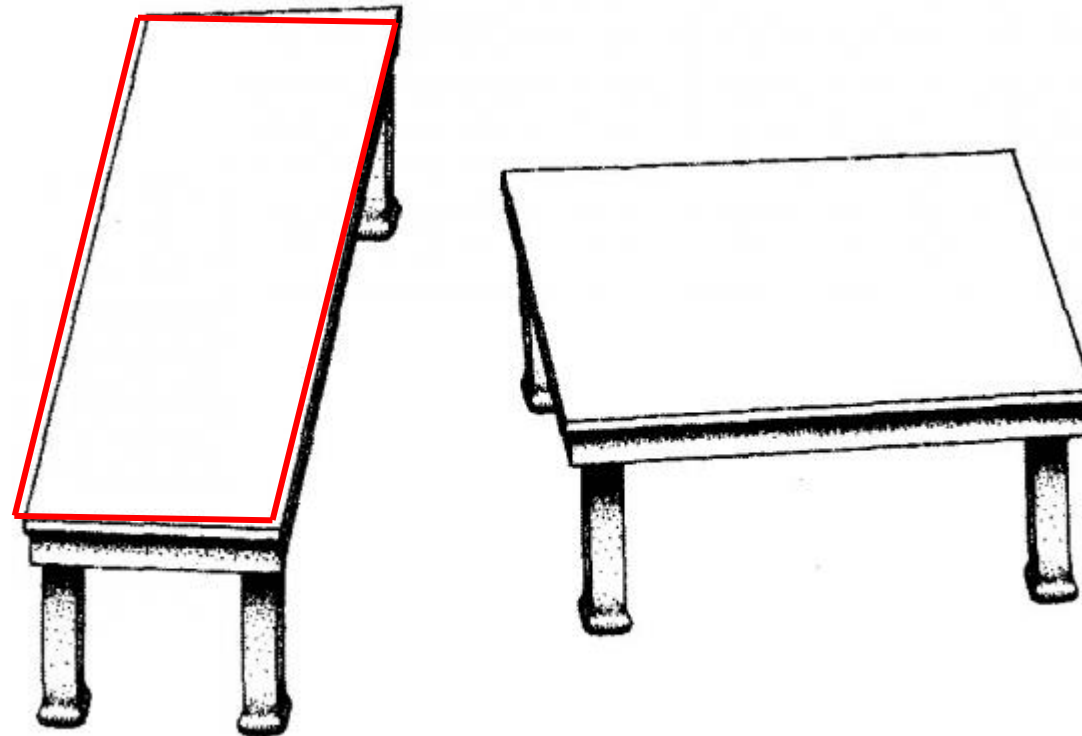








The mind takes shortcuts



Experiment: 3 Simple Questions

A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball.
How much does the ball cost?

_____ cents

If it takes 5 machines 5 minutes to make 5 widgets,
how long would it take 100 machines to make 100 widgets?

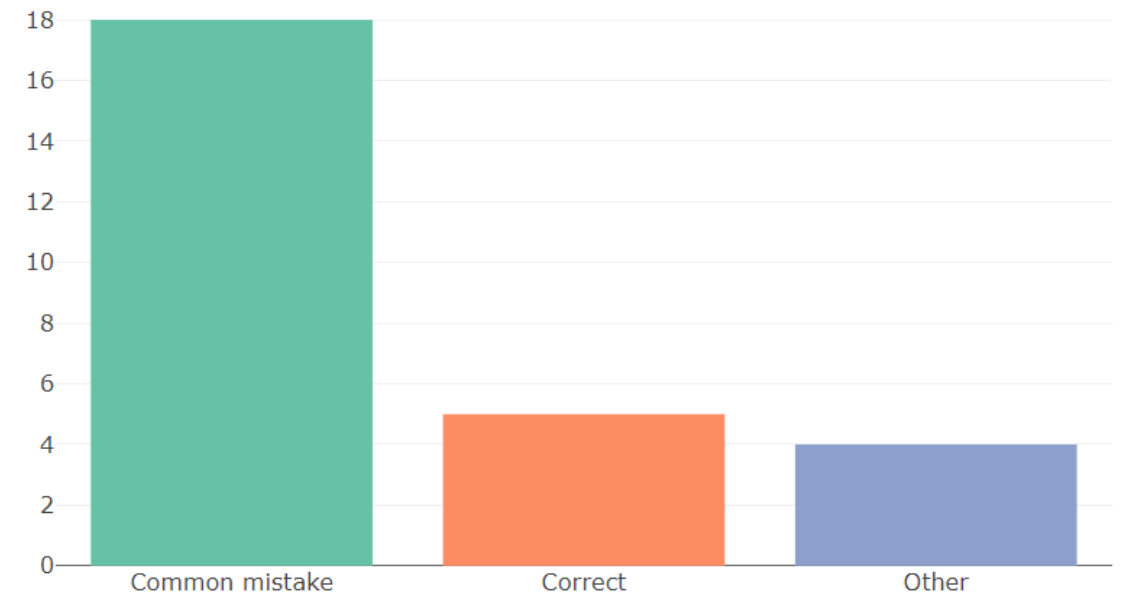
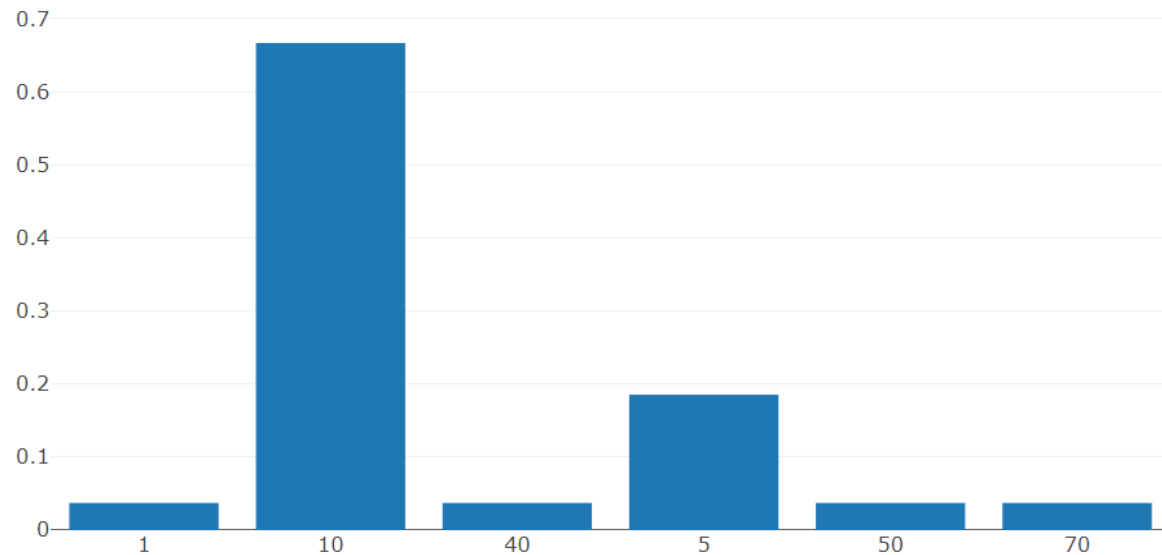
_____ minutes

In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

_____ days

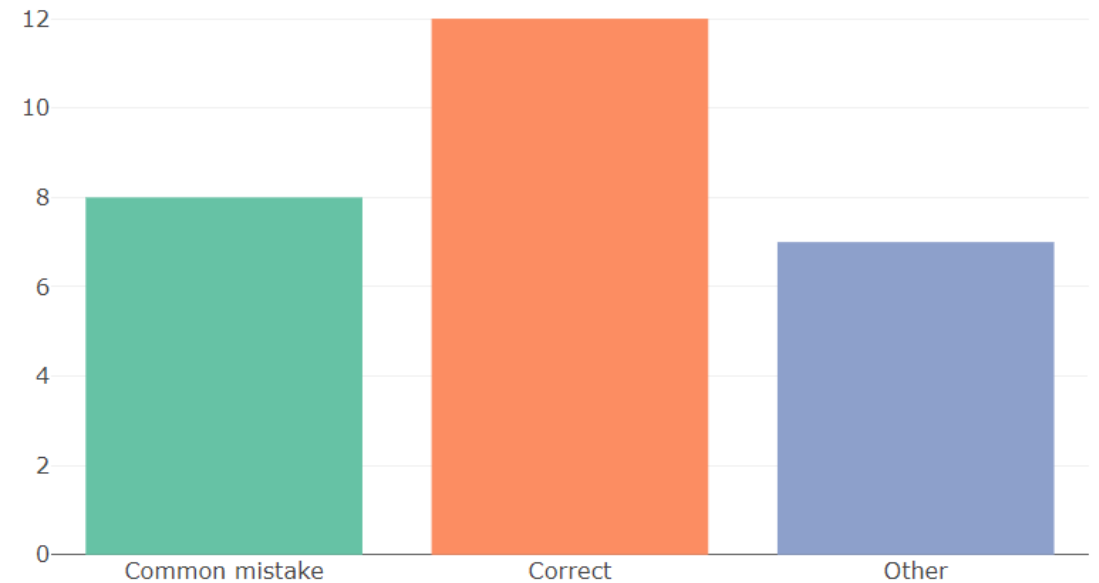
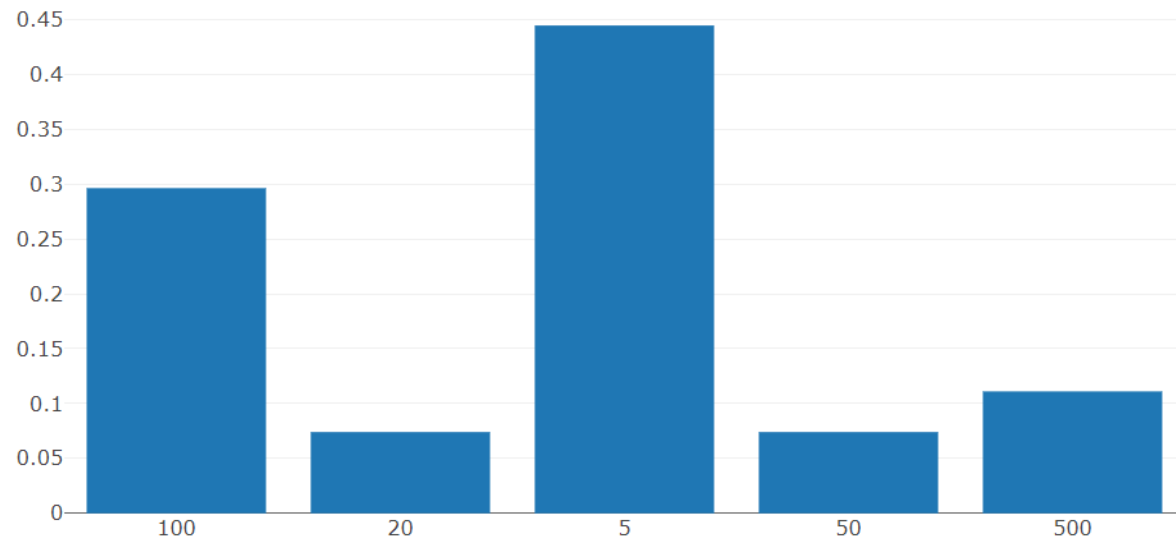
Show results of CRT: Baseball price

2.1 Baseball price



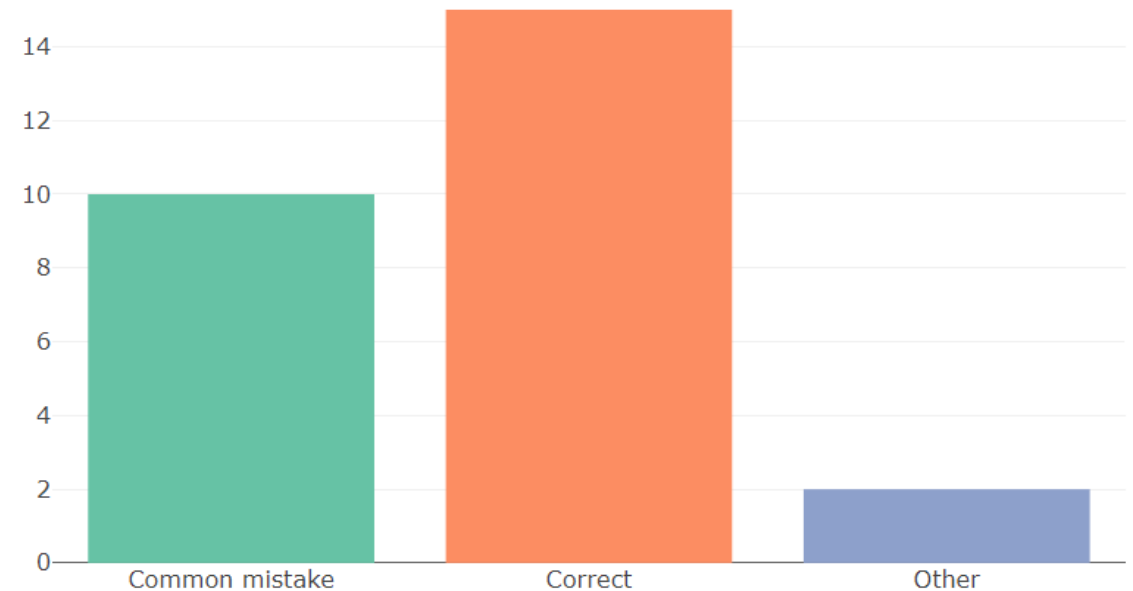
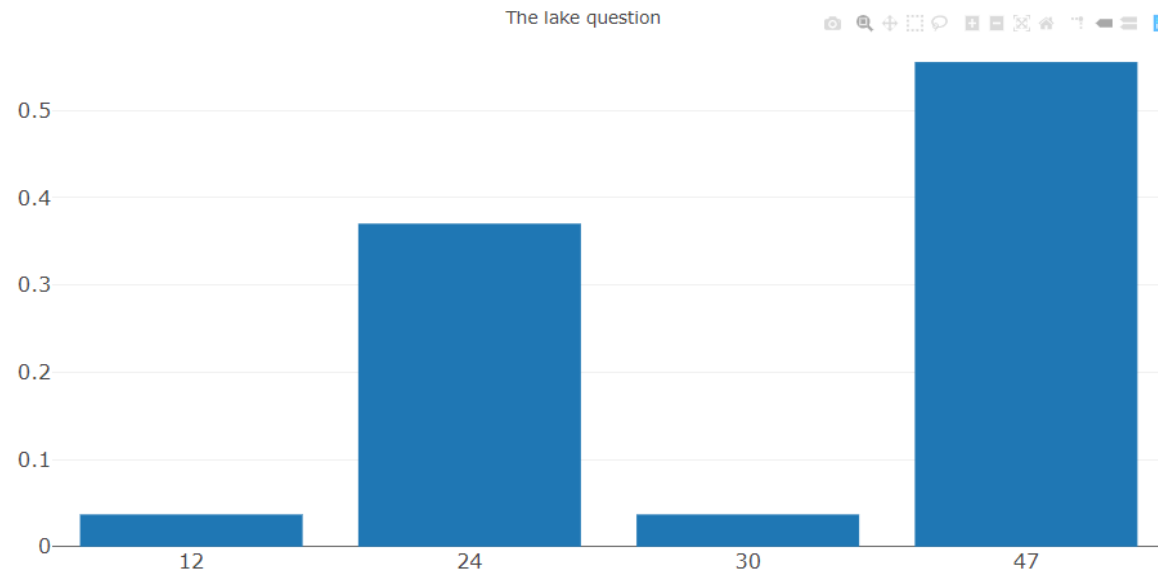
Show results of CRT: 100 machines

2.2 100 machines



Show results of CRT: lake

2.3 The lake



Experiment: 3 Simple Questions

A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball.

How much does the ball cost?

5 cents

If it takes 5 machines 5 minutes to make 5 widgets,
how long would it take 100 machines to make 100 widgets?

5 minutes

In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

47 days

Cognitive Reflection Test overview

Journal of Economic Perspectives—Volume 19, Number 4—Fall 2005—Pages 25–42

Cognitive Reflection and Decision Making

Shane Frederick

People with higher cognitive ability (or “IQ”) differ from those with lower cognitive ability in a variety of important and unimportant ways. On average, they live longer, earn more, have larger working memories, faster reaction times and are *more* susceptible to visual illusions (Jensen, 1998). Despite the diversity of phenomena related to IQ, few have attempted to understand—or even describe—its influences on judgment and decision making. Studies on time preference, risk preference, probability weighting, ambiguity aversion, endowment effects, anchoring and other widely researched topics rarely make any reference to the possible effects of cognitive abilities (or cognitive *traits*).

Decision researchers may neglect cognitive ability because they are more interested in the *average* effect of some experimental manipulation. On this view, individual differences (in intelligence or anything else) are regarded as a nuisance—as just another source of “unexplained” variance. Second, most studies are conducted on college undergraduates, who are widely perceived as fairly homogenous. Third, characterizing performance differences on cognitive tasks requires terms (“IQ” and “aptitudes” and such) that many object to because of their association with discriminatory policies. In short, researchers may be reluctant to study something they do not find interesting, that is not perceived to vary much within the subject pool conveniently obtained, and that will just get them into trouble anyway.

But as Lubinski and Humphreys (1997) note, a neglected aspect does not cease to operate because it is neglected, and there is no good reason for ignoring the *possibility* that general intelligence or various more specific cognitive abilities are important causal determinants of decision making. To provoke interest in this

■ *Shane Frederick is Assistant Professor of Management Science, Sloan School of Management, Massachusetts Institute of Technology, Cambridge Massachusetts. His e-mail address is (shanejfre@mit.edu).*

Design to measure the cognitive reflection of a person, the ability to reflect on an initial response when searching for a solution to a problem.

The test is design such that every question does have an easy but incorrect answer.

Behavior of probability matching and CRT are correlated

Cognitive Reflection Test (Frederick, 2005)

Dual Process Theory

Theory from psychology that explains how thoughts and decisions can be the results of two different cognitive processes.

System 1 comprises automatic processes without reflection. Easy.

System 2 comprises analytical processes with reflection. Needs to be activated.

Costly and hard.

Cognitive Reflection Test (Frederick, 2005)

Cognitive Reflection

The ability to reflect and override an initial “gut” response to find a correct answer. Activation of System 2 to override the initial response by System 1.

Cognitive reflection is (among others) correlated with cognitive ability, IQ, SAT scores, discounting (patience) and risk preferences.

What is Behavioral Economics?

What is behavioral economics?

It is about understanding economic behavior

– Why do we make the choices we do?

What is behavioral economics?

It is about understanding economic behavior

- Why do we make the choices we do?

It is about testing the standard economic model

- What does it do well and what not so well?

What is behavioral economics?

It is about understanding economic behavior

- Why do we make the choices we do?

It is about testing the standard economic model

- What does it do well and what not so well?

It is about applying insights from

economics,
psychology and
other social sciences

to study, explain, and predict human behavior

Behavioral Economics

Homer Simpson



Homo Economicus



Behavioral Economics

Homer Simpson



Not very smart!

Behavior determined by emotions, affect, reflexes, drive.

No self-control

Homo Economicus



Very, very smart!

Behavior determined by logic and optimization.

Maximal self-control

Behavioral Economics

Homer Simpson



Not very smart!

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Homo Economicus



Very, very smart!

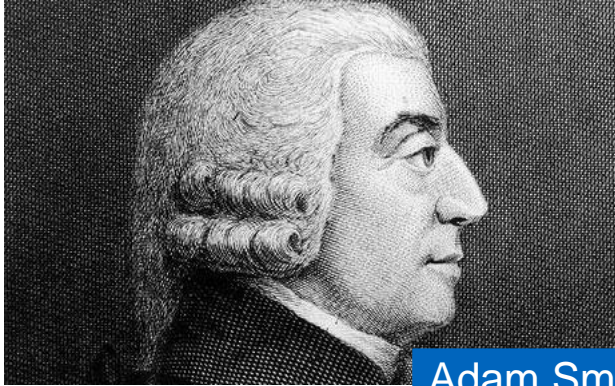
Behavior determined by logic and optimization.

Maximal self-control

Real People
Homo Sapiens

Behavioral Economics studies this middle ground

The origins of economics

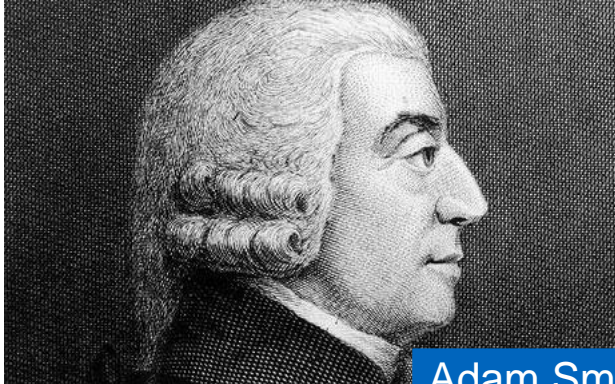


Adam Smith (1723 – 1790)

The Theory of Moral Sentiments 1759

The Wealth of Nations (1776)

The origins of economics



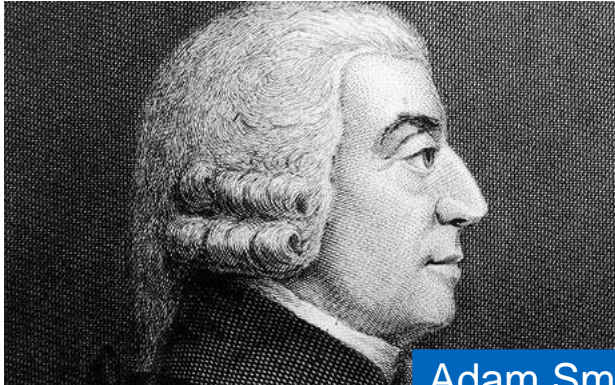
Adam Smith (1723 – 1790)

The Theory of Moral Sentiments 1759

The Wealth of Nations (1776)

*He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. [...] he intends only his own gain, and he is in this, as in many other cases, led by an **invisible hand** to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good.*

The origins of economics



Adam Smith (1723 – 1790)

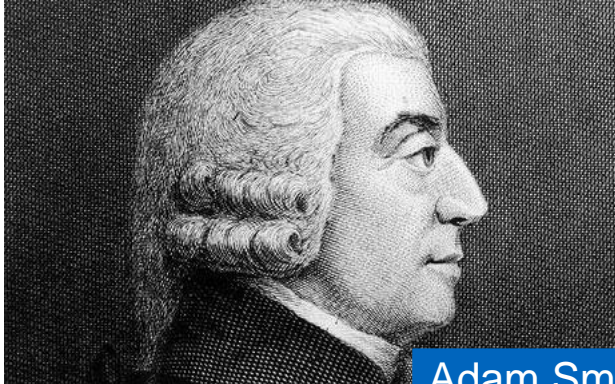
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It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages.

The origins of economics



Adam Smith (1723 – 1790)

The Theory of Moral Sentiments 1759

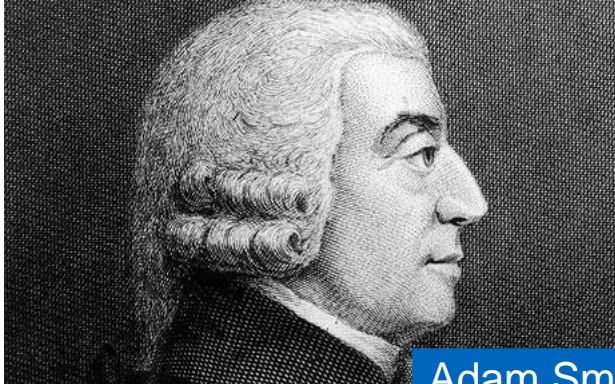
The Wealth of Nations (1776)

Smith tries to explain how humans develop their ability to form moral judgements.

In short: People observe others behavior and judgment. At the same time they are self-aware and want to be perceived well by others. This leads to a *mutual sympathy of sentiments*. Thus, people are not solely motivated by self-interest but also feel a natural sympathy with others.

habits → principles of behavior → conscience

The origins of economics



Adam Smith (1723 – 1790)

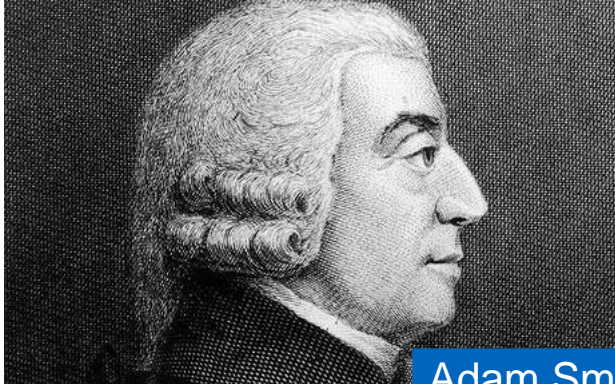
The Theory of Moral Sentiments 1759

The Wealth of Nations (1776)

While *The Wealth of the Nations* is probably better known, Smith probably regarded *The Theory of Moral Sentiments* as more important. He kept revising it until his death.

But aren't the two books in sharp contrast to each other? Is one right and the other wrong?

The origins of economics



Adam Smith (1723 – 1790)

The Theory of Moral Sentiments 1759

The Wealth of Nations (1776)

While *The Wealth of the Nations* is probably better known, Smith probably regarded *The Theory of Moral Sentiments* as more important. He kept revising it until his death.

But aren't the two books in sharp contrast to each other? Is one right and the other wrong?

Some scholars argue that both books are indeed compatible. Both books cover mechanisms that keep self-interest in check:

- sympathy
- markets and competition

The origins of economics

For a long while economics and psychology went hand in hand.

In *The Theory of Moral Sentiments* Adam Smith recognizes the importance of emotions, social preferences, social norms etc.

The origins of economics



The origins of economics



The origins of economics



The origins of economics



The origins of economics



Diminishing Marginal Utility

Principle that as more of a good is consumed, the consumption of additional amounts will yield smaller additions to utility.

The origins of economics

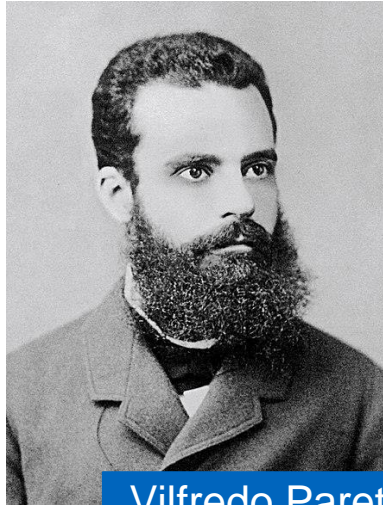
For a long while economics and psychology went hand in hand.

In *The Theory of Moral Sentiments* Adam Smith recognizes the importance of emotions, social preferences, social norms etc.

Fundamental economic principles like the law of diminishing marginal utility were based on the psychological theory of the time.

Thus, behavioral economics is not new!

Homo-economicus is born



Vilfredo Pareto (1848 – 1923)

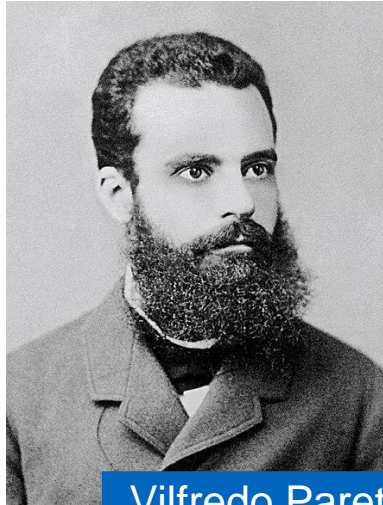
Pareto optimality

Propagated the shift from moral philosophy to an approach based on data and math

At the end of the 20th century Vilfredo Pareto argued economics break from psychology. The focus should be on choice rather than desire:

*I am not interested in the reason why man is indifferent between [one thing and another]:
I notice the pure fact.*

Homo-economicus is born



Vilfredo Pareto (1848 – 1923)

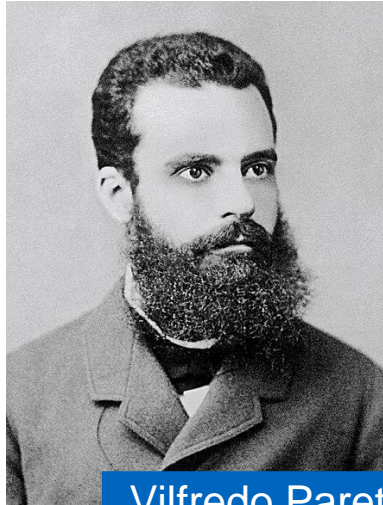
Pareto optimality

Propagated the shift from moral philosophy to an approach based on data and math

This approach allows to abstract away from complicated psychological questions and develop a mathematical theory of rational choice.

If people are rational, they will reveal their desires through choices and it is sufficient to focus on choice. Pareto recognized the limitations of the rational choice approach. For him it was a convenient theoretical starting point

Homo-economicus is born



Vilfredo Pareto (1848 – 1923)

Pareto optimality

Propagated the shift from moral philosophy to an approach based on data and math

In the 21st Century economics became more and more dominated by models of rational choice. The model of rational choice transforms from a convenient theoretical starting point to a normative model of how rational economic actors should behave.

Behavioral economics is (re-)born

In the second half of the 21st century behavioral economics made a comeback.

Five distinct elements in the comeback can be discerned:

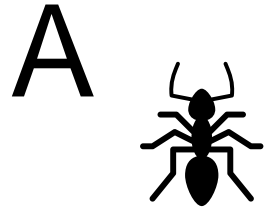
- Bounded rationality
- Cognitive bias
- Market design
- Equilibrium selection
- Policies that work.

Bounded rationality: Herbert Simon (1916-2001)



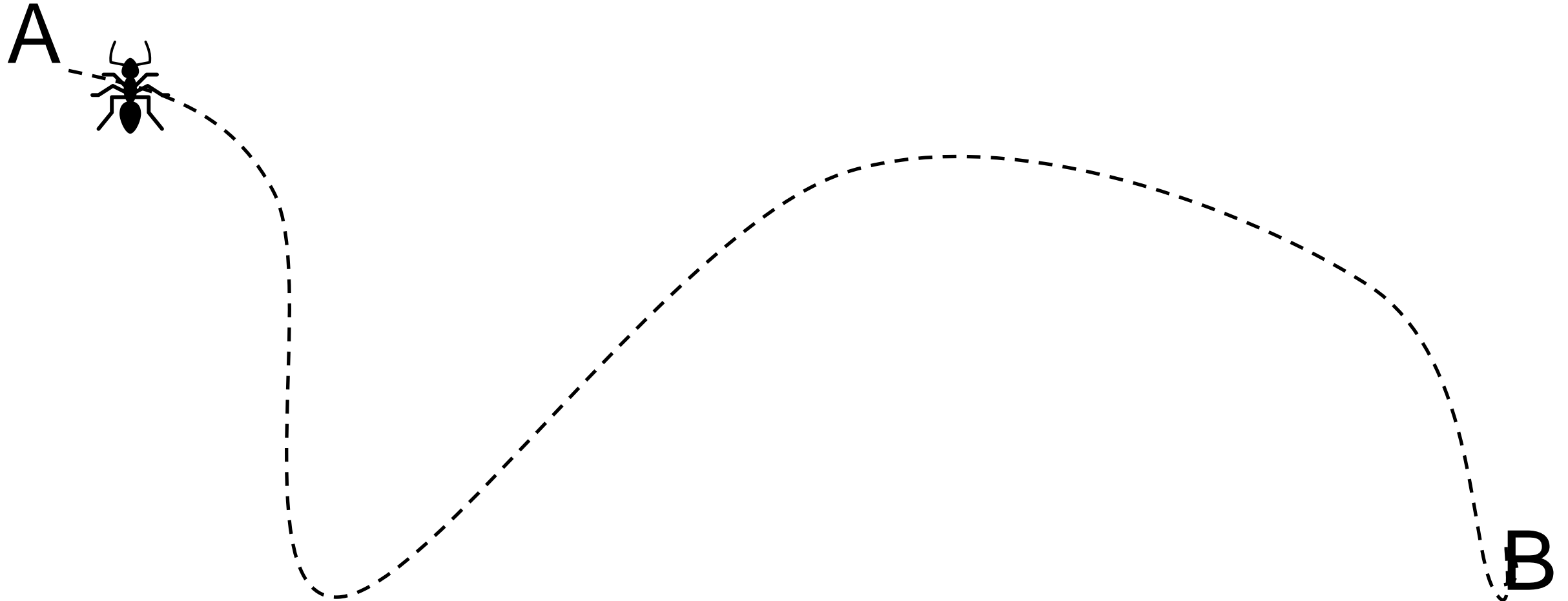
- A true “polymath”: contributed to Economics, but also Political Science, Cognitive Psychology and even Computer Science
- Introduced the concept of “bounded rationality”
- Received a Turing award, 1975
- Received a Nobel Prize in Economics, 1978

Ecological rationality: the environment matters!

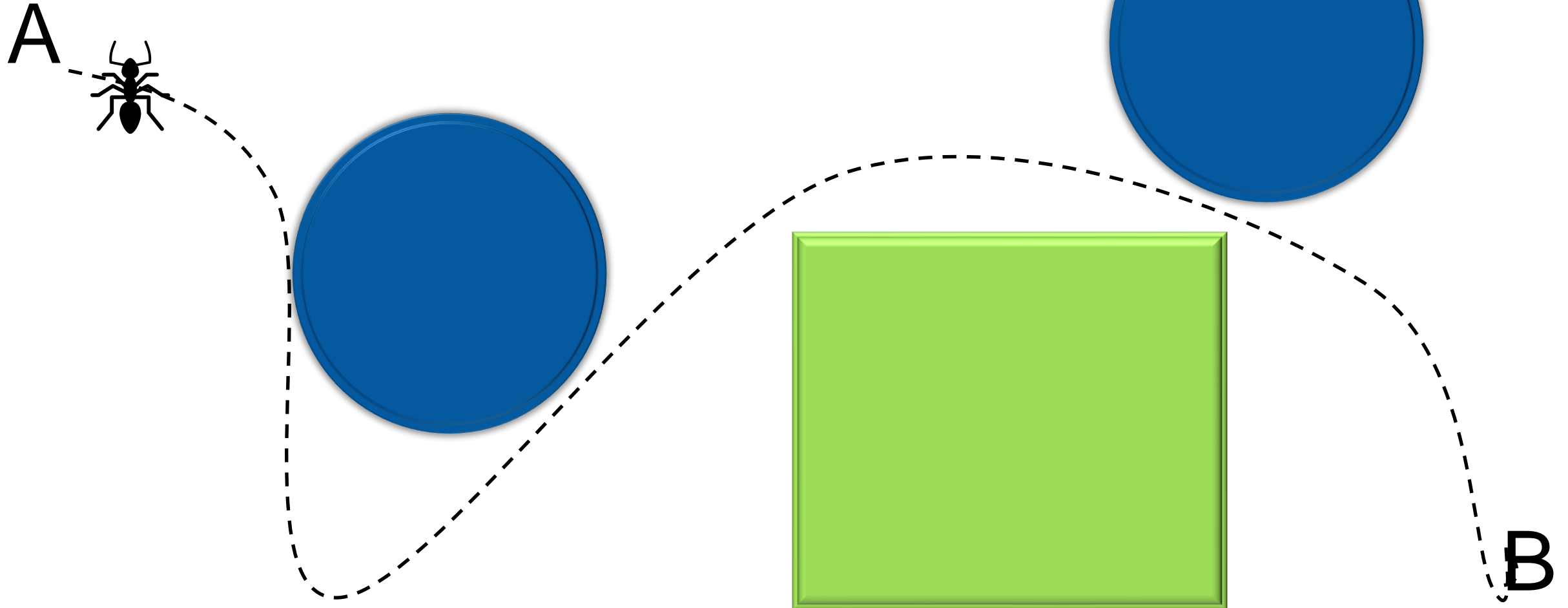


B

Ecological rationality: the environment matters!



Ecological rationality: the environment matters!

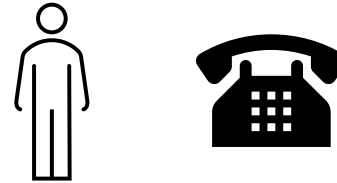


Two approaches in building a clock...

Watchmaker A



Watchmaker B



Two approaches in building a clock...

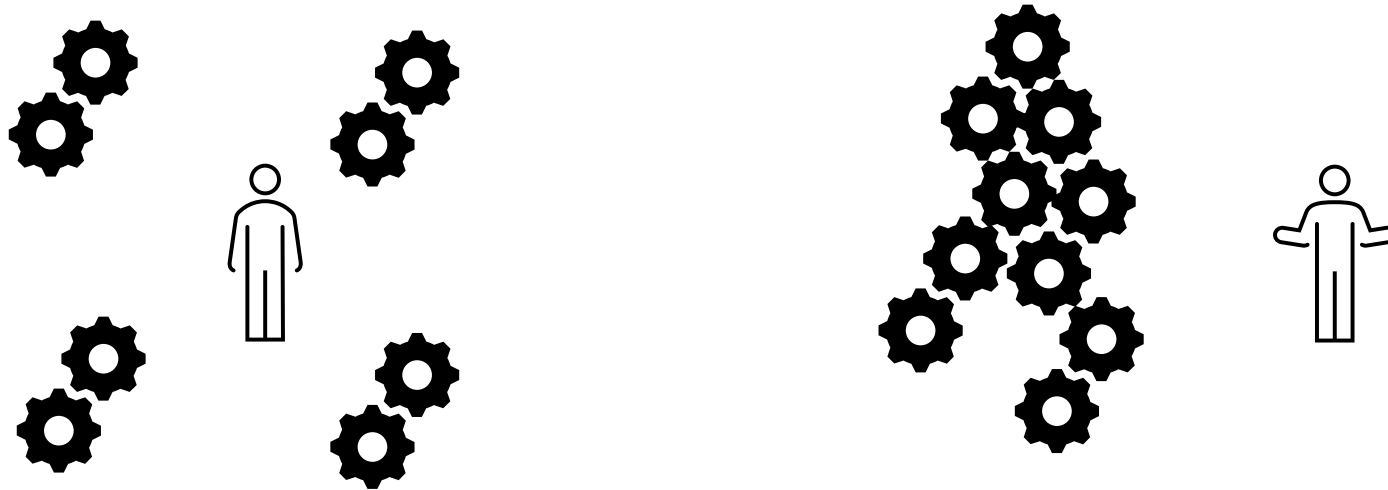
Watchmaker A: succeeds



Watchmaker B: goes bankrupt



Two approaches in building a clock...



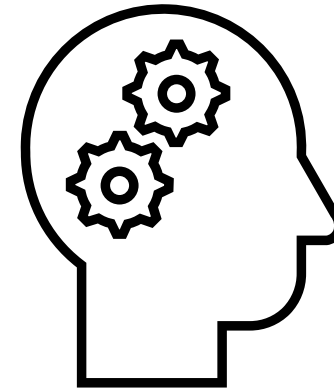
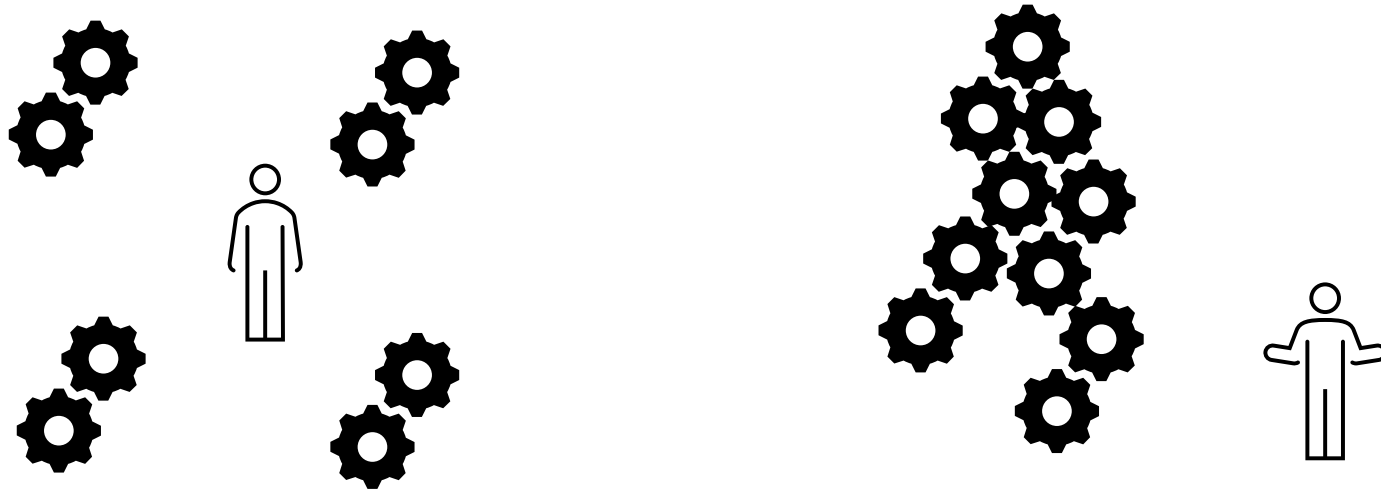
Bounded rationality



Herbert A. Simon (1916 – 2001)

In 1978 he was awarded the Noble prize *for his pioneering research into the decision-making process within economic organizations.*

Two approaches in building a clock...



Boundedly rational agents experience limits in formulating and solving complex problems and in processing (receiving, storing, retrieving, transmitting) information *Herbert A. Simon (1957)*

Bounded rationality research today

Max Planck Institute for Human Development, Berlin/ Centre for Adaptive rationality



Bounded rationality



Herbert A. Simon (1916 – 2001)

Introduces bounded rationality

Noble Prize in Economics, 1978

Simon's critique of the homo economicus was largely ignored. Yet, he inspired some other economists who would later push the boundaries of behavioral economics.

In his 1991 autobiography he writes: *My economist friends have long since given up on me, consigning me to psychology or some distant wasteland.*

One reason his criticism was largely ignored:

Where is the evidence that the models of rational choice fail?

Heuristics and biases: Amos Tversky and Daniel Kahneman

Kahneman and Tversky provided overwhelming evidence that the *assumptions* of the standard economic model are flawed.

- Cognitive bias – people make systematic mistakes (see the Bill Problem)
- **Prospect Theory**
 - Reference points. Losses loom larger than gains: status quo bias, bronze medalists happier than silver, ending up with EUR50 from EUR100 is worse than just receiving EUR50, etc...
 - Probability weighting: Rare events are overweighted – likely events are underweighted: buy lottery (risk seeking) and insurance (risk averse)



Cognitive bias



Amos Tversky (1937 – 1996)
Daniel Kahneman (1934 –)

In 2002 Kahneman was awarded the Nobel prize for *having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty.*

Cognitive bias



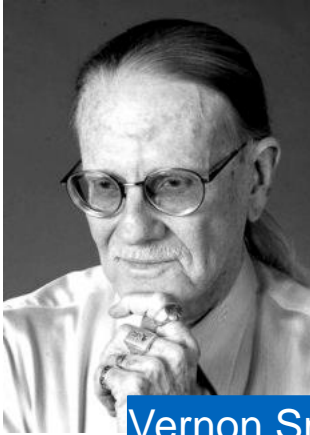
Amos Tversky (1937 – 1996)
Daniel Kahneman (1934 –)

In 2002 Kahneman was awarded the Noble prize for *having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty.*

Okay, obviously people are not like the homo economicus.

But does this mean that the standard theory is not a good predictor for aggregate behavior?

Market works



Vernon Smith (1927-)

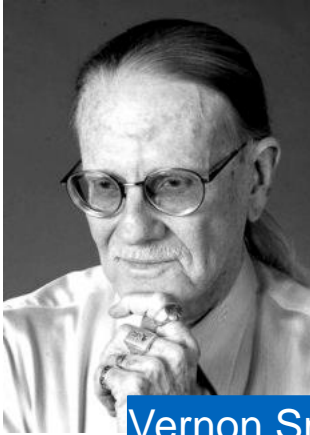
Noble Prize in Economics, 2002

Pioneer of Experimental Economics

In a pioneering series of experiments, beginning in the 1950s, Vernon Smith studied markets in the experimental lab.

He found that markets work! The *predictions* of the standard economic model hold true.

Market works



Vernon Smith (1927 -)

Noble Prize in Economics, 2002

Pioneer of Experimental Economics

In 2002, the alongside Kahneman, Smith was awarded the Noble prize *or having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms.*

But what if we have multiple equilibria?



Reinhard Selten (1930 - 2016)

Noble Prize in Economics, 1994

Pioneer of Game Theory

- Spieltheoretische Behandlung eines Oligopolmodells (1965)

Pioneer of Experimental Economics

- Ein Oligopolexperiment (1959)

But what if the standard economic model of rational choice doesn't make a prediction?

Game theory showed that this possibility is all too common – we get multiple equilibria.

Which equilibrium 'to choose'?

Reinhard Selten worked among other things on equilibrium selection.

But what if we have multiple equilibria?



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Noble Prize in Economics, 1994

Pioneer of Game Theory

- Spieltheoretische Behandlung eines Oligopolmodells (1965)

Pioneer of Experimental Economics

- Ein Oligopolexperiment (1959)

Selten considered himself a methodological dualist working on:

Normative Theories, in which subjects are presumed completely rational

Descriptive Theories, explain observed boundedly rational behavior. Construct positive theories which better described and predicted behavior than traditional theory.

But what if we have multiple equilibria?



Reinhard Selten (1930 - 2016)

Noble Prize in Economics, 1994

Pioneer of Game Theory

- Spieltheoretische Behandlung eines Oligopolmodells (1965)

Pioneer of Experimental Economics

- Ein Oligopolexperiment (1959)

In 1994, the alongside John F. Nash, Jr., and John C. Harsanyi, Selten was awarded the Noble prize *for refining the Nash equilibrium concept for analyzing dynamic strategic interaction by getting rid of unlikely equilibria. He also applied the refined concept to analyses of oligopolistic competition.*

He introduced the concept of the subgame perfect equilibrium.

But what if we have multiple equilibria?



Reinhard Selten (1930 - 2016)

Noble Prize in Economics, 1994

Pioneer of Game Theory

- Spieltheoretische Behandlung eines Oligopolmodells (1965)

Pioneer of Experimental Economics

- Ein Oligopolexperiment (1959)

[...] more and more I came to the conclusion that [...] the structure of [...] economic behavior cannot be invented in the armchair, it must be explored experimentally'
(Selten, 1994)

Nudge and behavior change



Richard H. Thaler (1945 -)

Noble Prize in Economics, 2017

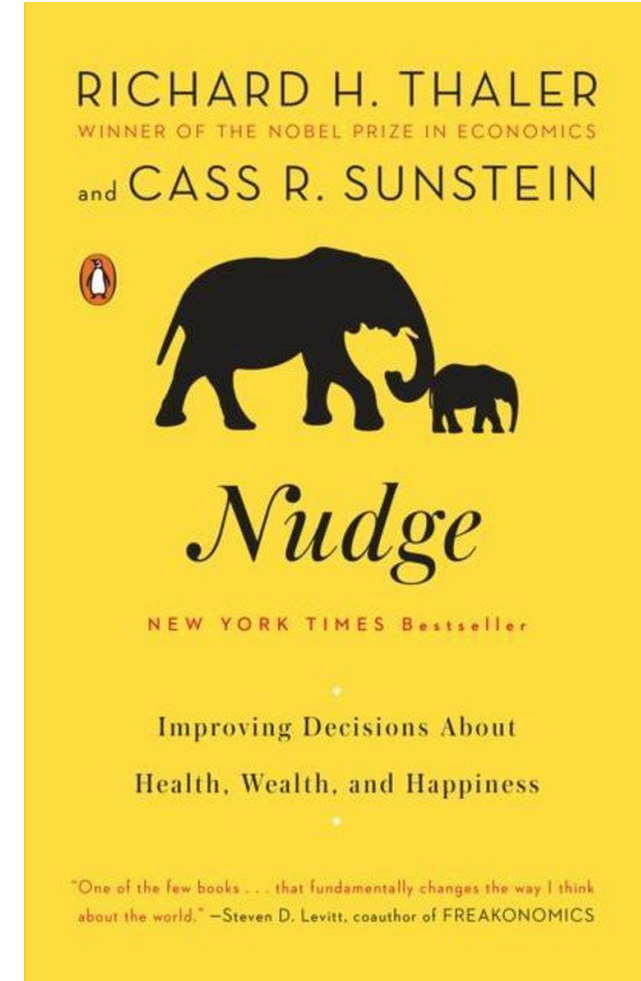
Collaborator of Kahneman and Tversky

In 2017, Thaler was awarded the Noble prize *for his contributions to behavioural economics*.

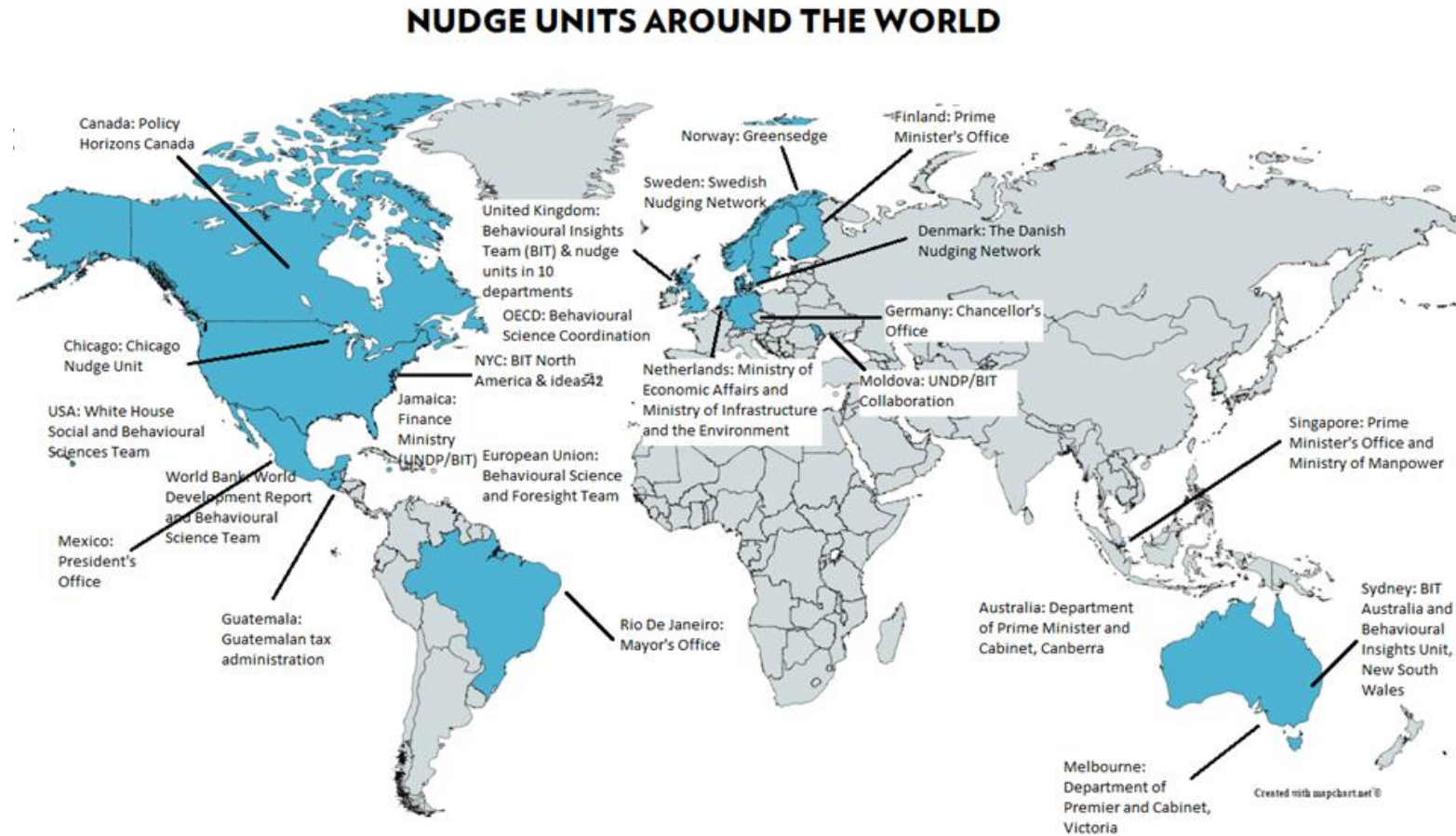
While Kahneman and Tversky are psychologists, Thaler is actually an economist
Demonstrated many biases in economic decision making
To the public, he is probably best know for book with Cass Sunstein on Nudges

Use knowledge as a “force for good” (examples)

Nudge: *any aspect of the **choice architecture** that alters people's behavior in a **predictable** way **without** forbidding any options or **significantly changing their economic incentives**. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not.*



Behavioral insights teams and nudge units



Source: Behavioural Insights Team, UK.

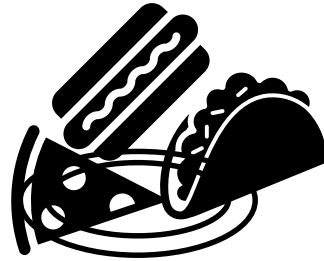
Use knowledge as a “force for good” (examples)



- Schiphol Airport, Amsterdam. Drawn fly improved “accuracy” reducing spillage by 80%!

Use knowledge as a “force for good” (examples)

- Food waste is environmentally impactful
- Reducing plate size in a hotel’s restaurant reduced food waste by approximately 20%.
- This intervention also saved the hotel money
- Kallbekken and Saelen (2013)





Policies that work

The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2019



Ill. Niklas Elmehed. © Nobel Media.
Abhijit Banerjee
Prize share: 1/3



Ill. Niklas Elmehed. © Nobel Media.
Esther Duflo
Prize share: 1/3



Ill. Niklas Elmehed. © Nobel Media.
Michael Kremer
Prize share: 1/3

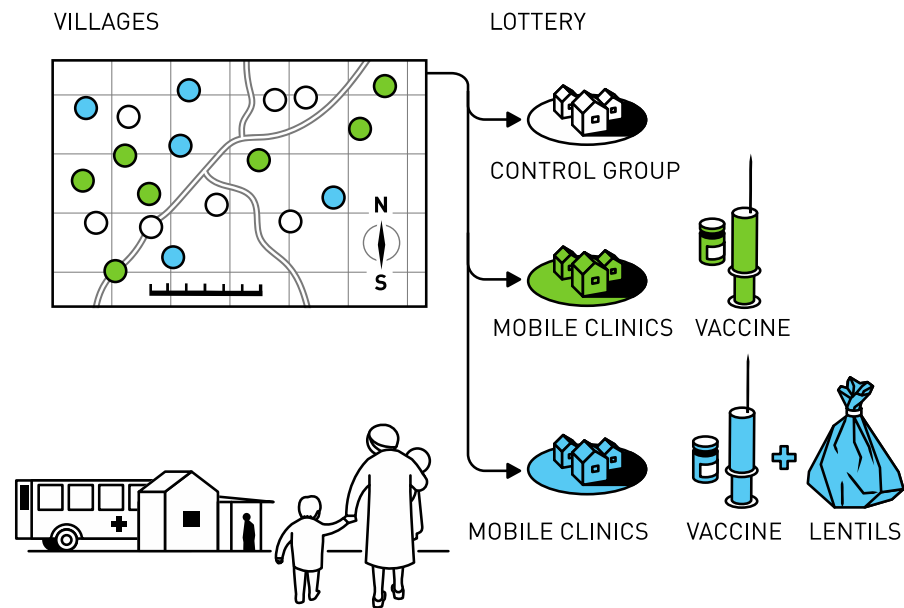
The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2019 was awarded jointly to Abhijit Banerjee, Esther Duflo and Michael Kremer "for their experimental approach to alleviating global poverty."

<https://www.nobelprize.org/prizes/economic-sciences/2019/summary/>
<https://www.youtube.com/embed/opDIEvmlx4A>

Research to help the world's poor

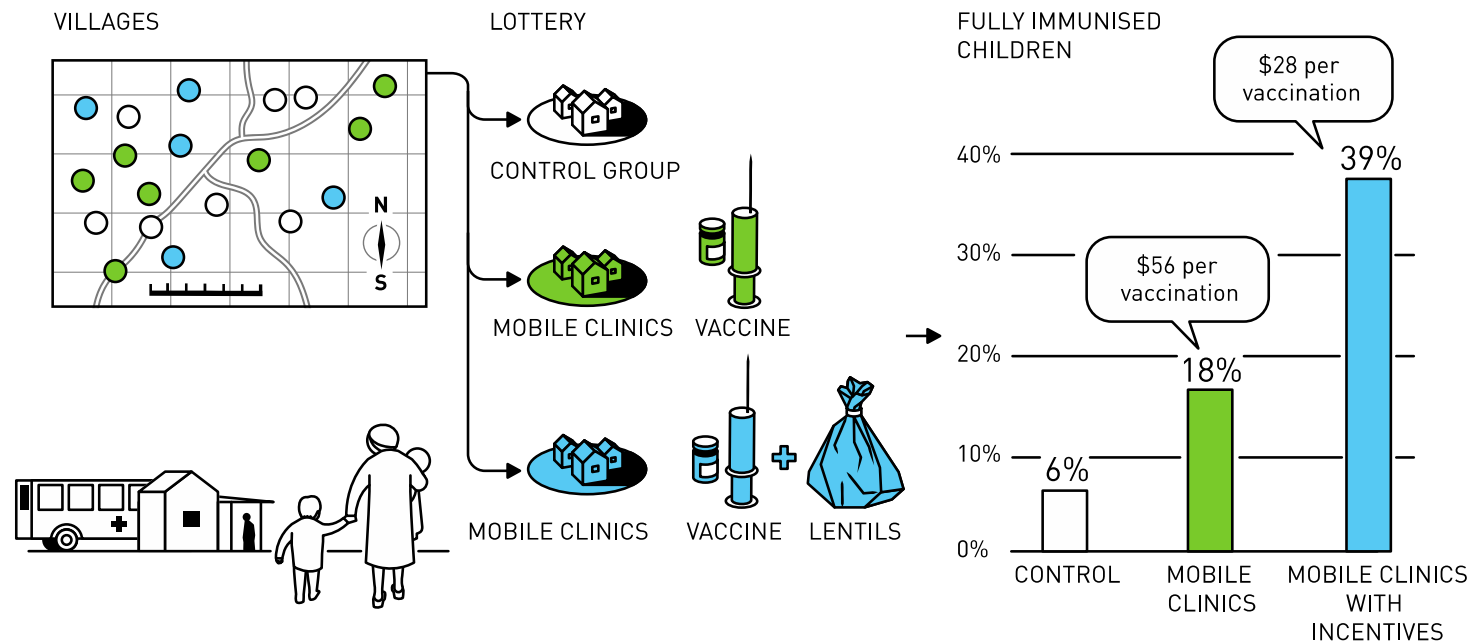
- Despite improvements in economic wellbeing (GDP per capita doubled in the poorest of countries between 1995-2018) and education (school attendance increased from 56 to 80%) gigantic challenges remain.
- Over 700 million people still subsist on extremely low income.
- Every year 5 million children still die before the age of 5.
- Half of the world's children leave school without basic literacy and numeracy skills.

Policies that work



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Policies that work



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