# Rule Rationality
vs.
# Act Rationality

Bob Aumann

**Center for the Study of Rationality**

The Hebrew University, Jerusalem

# The 2002 Economics Nobel Prize

was awarded to

Daniel Kahneman

and

Vernon Smith.

Kahneman showed that people are irrational.

Smith showed that people are rational.

What’s going on?

# Kahneman

- “In extensive research on human behavior based on surveys and experiments, … Kahneman … called into question the assumption of economic rationality. … (He showed) that people are incapable of fully analyzing complex decision situations … they rely instead on heuristic shortcuts and rules of thumb.”

  – Information for the Public

www.nobelprize.org/nobel_prizes/economics/laureates/2002/popular.html

# Smith

- “The first experiments in economics … (tested) … the most fundamental result in economic theory: … (that) the market price (equilibrates) between supply and demand. … Smith found, much to his surprise, that the prices obtained in the laboratory were very close to their theoretical values. … other researchers … by and large confirmed the results.”

  – Information for the Public

www.nobelprize.org/nobel_prizes/economics/laureates/2002/popular.html

# So, what indeed is going on?

Kahneman and Tversky themselves give the answer:

People use "heuristics" – rules of thumb; they do not consciously maximize. In their pioneering 1974 paper, they write:

"In general, (these heuristics) are quite useful, but sometimes they lead to severe and systematic errors."

-- D. Kahneman and A. Tversky (*Science,* 1974)

# In brief,

- Smith relates to the usual, the rule, the "in general;"
- Kahneman – to the unusual, the exception, the "sometimes."

- And,

- they're **both** right!

## But, what was the Nobel committee up to?

They awarded the prize not, as usual, for **findings,** but for a **methodology:**

Laboratory experiments – and surveys or polls – in economics.

## Georg HEGEL (1807)

Thesis: Classical Economics:

Rationality

Antithesis: Behavioral Economics:

Systematic Irrationality

Synthesis: Rule-Rationality

## Act Rationality:

Maximize over acts – in each decision situation, choose an act that's best in that situation.

## Rule Rationality:

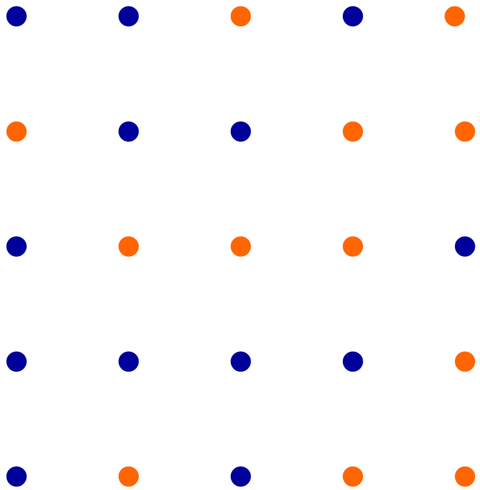
Maximize over rules--in each kind of decision situation, choose a rule that's best on the whole, or usually, but not necessarily always.

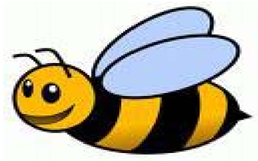
**Act Rationality** - deliberate, conscious.

**Rule Rationality** - evolutionary, learned, subconscious.

Often, the **rule** is executed by means of a **mechanism.**

# a. Bees, flowers, and nectar





**IRRATIONAL**

(Andreas Bertch, circa 1985, unpublished)

**Q: Actually, why would you expect rationality from a bee?**

**A: EVOLUTION – survival of the fittest**

# b. The Ultimatum Game

(Güth et al, 1982, Roth et al 1991, Roth and Slonim 1998, …)

Two people must divide $100.-
They are in separate rooms, do not know each other, and interact only this one time.

A designated one, the offerer, makes an offer. The other one, the responder, may either accept or reject. If he accepts, the amount is divided accordingly. If not, no one gets anything.

**Results:** Usually, most offers are 65-35 or more generous, and are accepted.

Some offers are 80-20, and are usually rejected.

This is $\boxed{\text{IRRATIONAL}}$

Possible explanations:

PRIDE, SELF-RESPECT, INSULT, REVENGE.

Irrelevant explanations:

REPUTATIONAL EFFECTS

- **BEES & FLOWERS**
  **Act: Find food wherever you can**
  **Rule: Go by Experience**
  **Mechanism: Learning window**

- **ULTIMATUM GAME**
  **Act: When offered $20, take them.**
  **Rule: Don't let people kick you in the stomach!**
  **Mechanisms: PRIDE, SELF-RESPECT, INSULT, REVENGE**

**Rationality is an expression of evolutionary forces, which work by the RULE, not the exception, not the contrived situation.**

# Other Examples:

- **Hunger & enjoyment of food**
- **Bees & orchids**
- **Enjoyment of sex**
- **Arrow's Pacific Island story**
- **Probability matching**
  - **Choosing a route to get to work (Dreze)**
- **Immediacy (Hyperbolic Discounting) (Bavli)**
- **Recency (overweighting the probability of recent events)**
- **Professor Selten's Umbrella**
- **Endowment Effect**
- **Anchoring**
- **Altruism**
- **Conjunction Fallacy (Zilber, Hertwig & Gigerenzer)**

# The 08 Financial Crisis

- One often hears that this was irrational, that behavioral economics explains it.
- On the contrary, IMHO the crisis came about because people responded to their incentives – i.e., behaved rationally.
- It is the incentives that were at fault.

# Immediate Cause: Subprime Lending

- Easy borrowing motivated high demand for housing
- This demand motivated a lot of new construction
- Then defaults created a housing glut, motivating a steep drop in prices
- Low down payments gave incentives to default
- This drove prices even further down
- The process continues …

# Underlying Causes:

- Entanglement (credit default swaps) created moral hazard
- Incentives for Loan Officers
- Incentives for Bank Executives
- These led to overly risky behavior, like
- Overleveraging

So, it’s all about

Incentives

DP 497 of the Hebrew University Rationality Center:

http://www.ratio.huji.ac.il/dp_files/dp497.pdf