ExpEcon Methods:
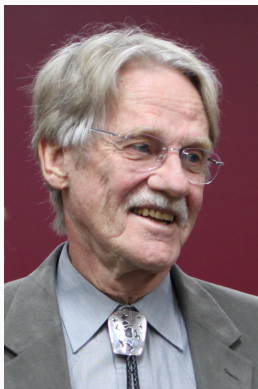# Vernon's Precepts

ECON 8877
P.J. Healy

Vernon Smith
2002 Nobel Prize

Other early pioneers: Plott, Kagel, Battalio, Williams… many

Why Vernon?

The 2002 Nobel Prize

- Vernon Smith & Charlie Plott: pioneered market experiments
  - $\rightarrow$ "experimental economics"
- Kahneman & Tversky: Prospect Theory
  - $\rightarrow$ "behavioral economics"
  - Tversky passed away in 1996

- Smith elucidated the theory of incentivized experiments
  - "Experimental Economics: Induced Value Theory" (1976)
  - "Microeconomic Systems as an Experimental Science" (1982)

Induced Value Theory (1976)

Experiments are important because

1. They are a *pretest* of economic theory
   - *Prior* to the use of field data
   - Using field data to modify models won't work since it's in-sample. "Any test of significance now becomes hopelessly confused"
     - Can't this be solved by cross-validation?
   - Model → expm'nt → new model → expm'nt → new model → …
2. (Presumed) parallelism between lab and field
   - Physics: "As far as we can tell, the same physical laws prevail everywhere."
   - My more nuanced view: experimental results are simply provocative examples. Worth worrying about, at least.

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

1. "Non-satiation" (monotonically increasing utility)
   - Monetary reward: $M(a)$ for action a
   - Utility for money: $u(M)$, $u' > 0$
   - $\arg\max_a u(M(a)) = \arg\max_a M(a)$
   - MRS is the same:

$$\frac{\partial u(M(x,y))/\partial x}{\partial u(M(x,y))/\partial y} = \frac{u'\partial M/\partial x}{u'\partial M/\partial y} = \frac{\partial M/\partial x}{\partial M/\partial y}$$

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

2. "Saliency" (actions map to rewards)
- Action profiles a map into rewards $M(a)$
- This mapping is known and understood
- Example: If you win an auction, you earn v_i
- Example: Show-up fee is not salient

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

3. "Dominance" (sufficiently large rewards)
   - The reward structure dominates any subjective costs or values
   - Example: Cognitive costs, effort
   - Example: Paying a commission for each transaction
   - Other-regarding preferences??

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

4. "Privacy" (only know your own payoff)
    - Subjects can only see their own payoffs
    - Goal: own-reward maximizers
    - Removes social preferences
    - But what if we want to study social preferences??

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

5. "Parallelism" (aka "external validity")
    - Lab results apply to non-lab settings
    - Not required if only testing theories in the abstract
    - "the same physical laws prevail everywhere" (Harlow Shapley 1964)
    - How to test parallelism? Comparison studies
    - Who has the burden of proof?
    - My view (following Roth):
        - Experiments provide provocative examples
        - We can't guarantee parallelism, but our results are at least worth considering in the field

Micro Systems as Experimental Science (1982)

What else this paper does:

- Experiments as game forms $\Rightarrow$ mechanism design
    - Mount-Reiter diagram (Fig. 1)
- Classifications of experiments
    - Vary environment vs. vary institution
    - Methodological:
        1. Establishing laws of behavior
        2. Heuristic/exploratory experiments
        3. Boundary/extreme experiments
- List of "stylized facts" (robust results)