

# **ExpEcon Methods: Vernon's Precepts**

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P.J. Healy

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# Vernon Smith



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
  - → “experimental economics”
- Kahneman & Tversky: Prospect Theory
  - → “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 is flawed since it's in-sample.  
"Any test of significance now becomes hopelessly confused"
    - Discuss: Do you agree?
  - Model → exp'm't → new model → exp'm't → new model → ...
2. (Presumed) parallelism between lab and field
  - Physics: "As far as we can tell, the same physical laws prevail everywhere."
  - Smith: "The laboratory becomes a place where real people earn real money for making real decisions about abstract claims that are just as "real" as a share of General Motors."
    - Discuss: Do you agree?

# 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:  $u(M)$ ,  $u' > 0$
- $\arg \max_a u(M(a)) = \arg \max_a M(a)$
- If multiple actions (eg,  $a = (x, y)$ ), MRS is the same:

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

- Assumes choice is costless
- Assumes selfish money maximization
  - Vernon was really just focused on market experiments
  - Vernon is a libertarian...

# 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
  - Warning: Not the same as Shliefer *et al.* notion of salience

# 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 to offset effort costs
- Discussion: Do we want to rule out 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
  - Removes “tournament incentives” (desire to come in first)
  - Discussion: 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 ⇒ 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)