

Game Theory and Thesis

- Research Design
- The Choice of Game Theory as a Method
- Continued Learning

Role of Strategy in Policy and Modeling

- **Descriptive Modeling:** We see associations between variables, but we do not understand why they happen.
- **Causal Modeling:** We incorporate theories of cause and effect to describe relationships between models.
- **Policy Modeling:** We have sufficient understanding to intervene in systems with new designs, delivering never before achieved outcomes
- **Strategy Modeling:** We understand how to deliver policy outcomes in the face of multi-actor complexity.

(Porter et al, 2010)

The Arch of Knowledge

(Book by Oldroyd, 1986)



Theory

Empiricism

Arch at Palmyra. Photo by Diemert (cc-by-1.0 license)

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Game Theory Strengths and Weaknesses

Strengths

- Sound theoretical basis
- Transparent reasoning
- Emphasizes strategic communication
- Emphasizes critical thinking
- Good for the highest level of models involving strategic thinking
- Able to be combined with other research techniques
- Capable of using in various degrees or dosages

Weaknesses

- Incomplete without empirical evidence
- Should be supplemented with techniques to establish costs, values, utilities, payoffs
- Currently few tools to support policy analysts
- No uniformly agreed upon approach

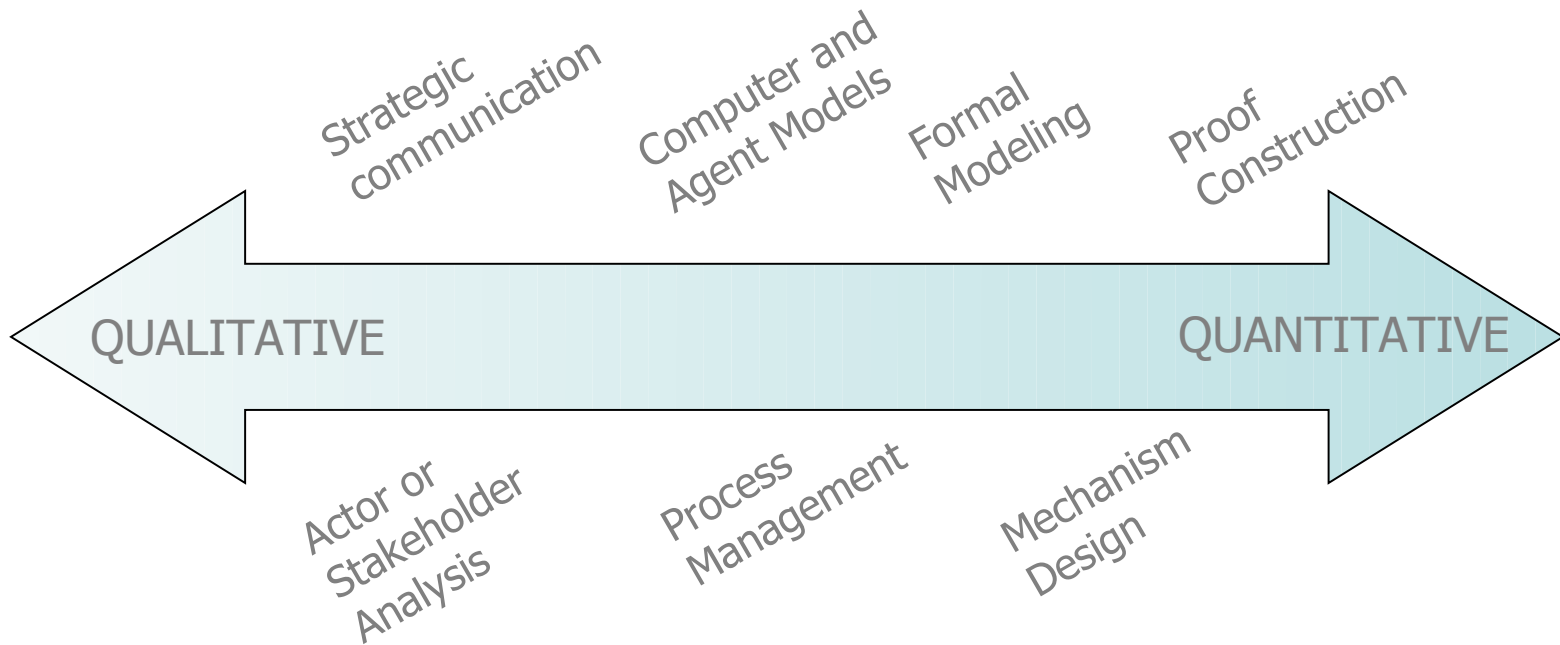
What Is Game Theory?



- For purposes of gaining insight, strategizing, arbitrating or communicating about multi-actor systems
- You don't uniformly do any one thing when you use game theory
- You don't uniformly believe any one thing when you adopt the game theory approach
- A collection of components

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A Range of Game Theory Approaches



Actor Analysis Redux



But there are characteristic things that game theorists examine again and again regardless of the setting:

- Players
- Payoffs
- Information
- Strategies
- Coalitions
- Solution Concepts

Bali dance masks. Photo by Gunkarta Gunawan Kartapranata (cc-by-sa-3.0)

Off the Rack Solutions



Clothing on a rack. By Rico Shen (cc-by-sa-2.0)

- Actor Analysis / Soft Operations Research Methods
- Agent-Based and Evolutionary Approaches
- Arbitration, Mediation and Negotiation Methods
- Power Indices
- Policy Theories
- Experiments and Gaming

Good Combinations with Game Theory

- simulation, optimization or modeling to establish payoffs
- case study work to anchor reasoning and gather facts
- gaming or experiments to develop pointed research designs or to strategically analyze
- expert opinion, interviews or surveys to determine what people really care about
- scenarios to help plan in the face of strategic uncertainty
- theories, to seek generalizeable knowledge
- Problems or applications to develop small, but approachable models

Two Good Follow-Up Books

