

Empirically challenged?

- If agent heterogeneity is a major part, and ABM would help, how to derive agent types? Agent categorization v. variation (Brown and Robinson):
 - Influence of income, networks?
 - Group by decision type? E.g., developers, buyers, etc.. Group by decision heuristics? E.g., optimization, imitation.
 - Variation within would be changes in parameter value

Empirical methodologies

- Q-Sort (Darla): Psychological technique, focus groups to get concourse of statements (e.g., about value of forest), develop the concourse to survey what they identify with and rank, then principal components analysis to create types. Challenge remains for creating rules.
- Surveys (Nick): Interviews and surveys in each case study. Attitudes towards energy and climate change, how they see it as related to their own behavior, and if it actually changes if they're given additional information. Also including lifestyle questions (values and identity). Challenge: how to select control group, need longitudinal study, integrating different theoretical perspectives.
- Interviews about story lines (Pedro): Changing roles over time, life cycle, rates of change, inheritance of behavior, conflict (role of church!). Validation of modeling outcomes. Challenge: we only know actions, but not decision-making, necessarily, still need to derive.
- Using data from agencies (Moira)

Modeling challenges

- Adaptive preferences and decision-making frameworks
- Use empirical data to establish trends and define time steps, rates of change, magnitude of change, particularly with all the feedback across scales and in different directions.
- Getting information about spread of adoption/adaptation/interactions (may be unconscious or different from what is reported)
- If we model change of preference over time, guided by data, risk of overfitting.
- Use empirical data to set the initial condition or whether the empirical data should be used to develop the initial condition.
- Slow development v. rapid changes in current decision-making and/or exogenous conditions (uncertainty)
- Cost (\$ and time). Is it worth it?

How to address challenges

- Role playing games:
 - Think aloud to get reasonable trace of their decision-making (individual)
 - Companion modeling (group)
- Empirics have to be beyond individual level to group level (psychology and sociology)
- Initial conditions: Collect data on different experiments (natural experiments), or model comparison.
- Model comparisons, e.g. planning models (quick) with ABM (slow). Flexibility in model structure.
- Liberate corporate databases
- There is such thing as too much data.