

Evidence-based modelling with agents

A defensible approach to the use of
models in policy analysis

Scott Moss



What policy makers want

- Answers
 - Forecasts of policy impacts
- Indicators
 - Statistics indicating whether policy impacts are as forecast



What policy makers get

- Answers?
 - There has never been a correct forecast of a social policy impact
- Indicators?
 - Top-level statistical indicators are measure of failure of policy initiatives
 - Indicators provide neither reasons for nor explanations of policy failure or success



Policy makers and models

- Policy impact forecasts are made independently of policy makers
- Policy impact forecasts are evidence used in policy formation



Agent-based modelling: The current offering

- Judged by most recent issue of JASSS
 - 6 articles with agents (plus 1 system dynamics model)
- Informed by or testing some social theory
 - Lustick, Frank *et al.*, Wierzbicki, *et al.*, Salge *et al.*
- Structured by existing formalism
 - Frank, *et al.*, Malarz *et al.*, , Salge *et al*
- Incorporating evidence into the argument
 - Lustick, Frank
- Specific policy implications drawn
 - de Bakker, *et al.*



The questions

- Are we there yet?
- What needs to be done to involve agent-based simulation in practical decision making?



Are we there yet?

- Do we have the necessary capabilities?
 - Undoubtedly we have, or can produce, the necessary technology
- Do we apply these capabilities in a way which is directly useful in practical decision-making?
 - Arguably not



Why are we not yet there?

- A concern to base models on abstract social theories remote from concerns of decision-makers
 - Too abstract
 - Failure to provide useful forecasts
- Models and modellers do not attract a sense of ownership or engagement from decision-makers



What is to be done?

- Make models useful to decision-makers
 - Not too abstract
 - Based on documentary evidence, perhaps stakeholder-generated scenarios, and stakeholder views
 - No false promises about forecasts
 - Accept that social interaction makes forecasting impracticable
 - Provide specific, credible benefits.
 - Precision
 - Explication of assumed or required processes



What is to be done: reduce degree of abstraction

- Models should
 - Be based on available, independent evidence
 - Produce verbal outputs in language recognisable by stakeholders
 - Capture relevant social processes in language recognisable by stakeholders



What is to be done: no false forecasting promises

- Agent-based model can be specified in collaboration with stakeholders to capture their preferred scenarios
- Objective is to produce consistent stakeholder-generated and model-generated scenarios
- As part of consultation process, other stakeholders should be able to explore, criticise and amend “official” scenario



Specific, credible benefits

- Perceptions and assumptions are stated explicitly and precisely
- Evidence constrains ideology
- Differences in different stakeholders' arguments and justifications for policy proposals can be made crystal clear
- Patently stupid assumptions and claims more readily exposed



How is it to be done?

