

What have we achieved?

MABS 2000

2nd International Workshop on Multi Agent Based Simulation



Scott Moss,
Centre for Policy Modelling

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My issues for MABS-2000

- Problem-oriented approach
 - Techniques chosen or developed for aim of software system (e.g. social simulation model)
- Agent interaction in scalable, complex software systems
- Validation of representational models and applications
- Role of foundational ABSS



Your issues for MABS-2000: prediction

- Prediction validates simulation models as descriptions of social systems
- Predicting properties of systems with changing structures
- Expectancy of conditions that will (might?) emerge in real world



Validation

- Require validation methodology
- Complexity of agent specification
 - Complex agents identified with basis of agent design in cognitive science
- Complexity of agent design trades off explanation for prediction



Reported validation procedures

- Validation by appeal to domain experts and/or qualitative descriptions of observation
 - Retirement model (Rob Axtell)?
 - Archisim (presented by Alexis Drogoul)
 - Climate change models (Claudia Pahl-Worstl)
 - Shipping (Klaus Fischer)
 - Inter-sexual dominance (Charlotte Hemelrijk)
 - Common resource use (Olivier Barreteau)
- Validation by prediction
 - None in conventional sense of (*eg*) Popper



Problem-solving

- Small models to solve particular problems
 - Cognitive science *vs* engineering
 - “Any purposive behaviour modellable as utility formulation” – Axtell
- Impact of sociological models on technical systems
- Organizational analysis
 - New forms crossing computer-human boundaries
- Feedback to social scientists



Macro-micro issues

- Different perspectives rather than different simulation systems
 - Drogoul, Fischer, Barreteau, Pahl-Worstl
- Need model systems – different grain but mutually consistent



Discussion of micro-macro issues

- Universality: given macro system properties sometimes follow from a range of alternative agent specifications.
 - Axtell: Makes agent specifications less important
 - Drogoul: Axtell view (representing SFI) incompatible with participatory modelling approaches
- When and why universality occurs is an important research issues



Foundational issues

- Formalisms & derivatives
 - Norling: extending BDI as programming paradigm
 - Teran: transforming agent models to constraint logic – facilitating theorem proving of MAS properties
 - David: extending use of logical formalisms to clarify core concepts and issues without loss of expressiveness
- Promise of link to representational simulations
 - Scale problem?



Lessons or results from papers

- Validation – which papers validated models
 - In practice, papers with validation entailed validation by description
- Feedback to social scientists?
- Impact of cognitive science?
- Contributions to software design/engineering
 - From use of or appeal to logical formalisms?
 - By analogy from social models?



Final issues raised in discussion

- What kinds of systems are best approached using a MAS paradigm?
- Within MASs, what should be the most fine grained level of agent?
- How is the grain of the system to me justified?

