The New Best Practice for Agent-Based Simulations?

Modelling Agents with Social Practices

Rijk Mercuur

Supervisor: Virginia Dignum Promotor: Catholijn Jonker & Dirk Helbing Delft University of Technology, The Netherlands

How did you commute to work this morning? And why?



SoPrA: Social Practice Agent

Knowledge and

embodied skills

Abilities -

Agent

Environment

Actions

Goals/Preferences

Prior Knowledge

Observations

Past Experiences

Cultural conventions, expectations and socially shared meanings

Meaning

Reference: Shove, E., Pantzar, M. and Watson, M., 2012. The dynamics of social practice: Everyday life

Competence

Material

Objects, tools and

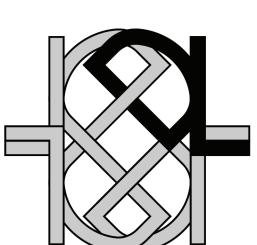
infrastructures

To what extent can we improve the explanations of agent-based simulations by endowing agents with social practices?

Tools



- Clear Communication
- Translateable into software implementation



- Unambigious and precise semantics
- Allows automated inferences
 with reasoner

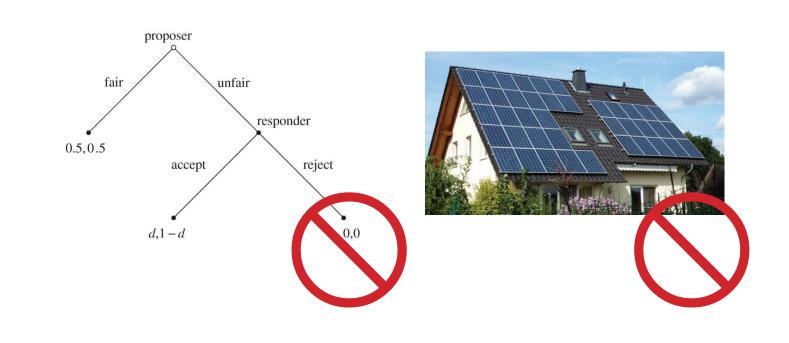


- Allows modelling temporal relations and loops
- Cross-Validation: comparing empirical to micro and macro

Social Practice Implementation type: (allOf, partOf) convention: Double Activity +type: (Action, AbstractAction, TopAction) HabitualTrigger Beliefs RelatedValue Affordance RequiredCompetence +strength: Double +strength: Double hasValue +strength: Double Competence

type: (Agent, Resource, Place)

Domains



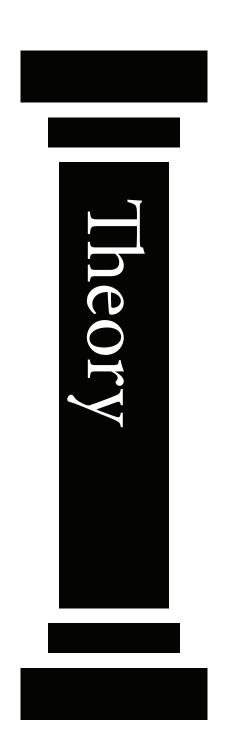


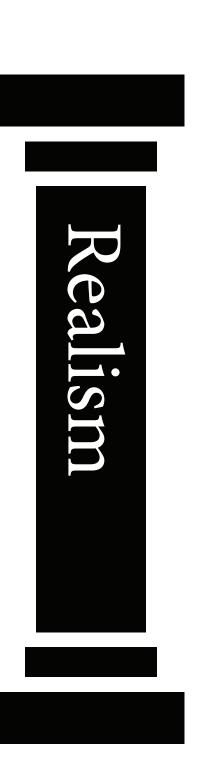


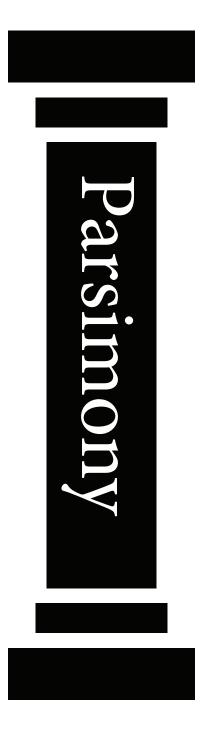




Evaluation









Results & Future Work

- •Compared a value, value-norm and the SoPrA model in the Ultimatum Game to get more insight in the scope of the different models
- •Modelled, formalized and programmed the static part of SoPrA based on the evaluation criteria
- •Tested the static part of SoPrA to three domains: hospital, rumourmongering & commuting
- •Next step: Model the dynamic part, apply to the domains and evalutate on th criteria

