Samaneh Heidari
s.heidari@uu.nl

EU POLICIES AND SOCIAL SIMULATION

EU policies-Why simulation

- EU Policy and unexpected results
  - ITQ(individual transferable quotas) Iceland
    - Aim: limiting "race to fish" amongst competing vessels
    - Success: sustainable stuck market
    - Unexpected outcomes:
      - Environment: bycatch, Illegal, Unreported and Unregulated Fishing (IUU)
      - Social: disappearing fishery villages

Question

- Question:
  - How does social norm impact individual decisions?
  - How a social norm emerge?
- Pre-questions:
  - What is social norm?
  - What is the difference of social norm and behavioral patterns?

What is social norm

- Norm phases
  - Observation
  - Adoption
  - Internalization
  - Disappearing

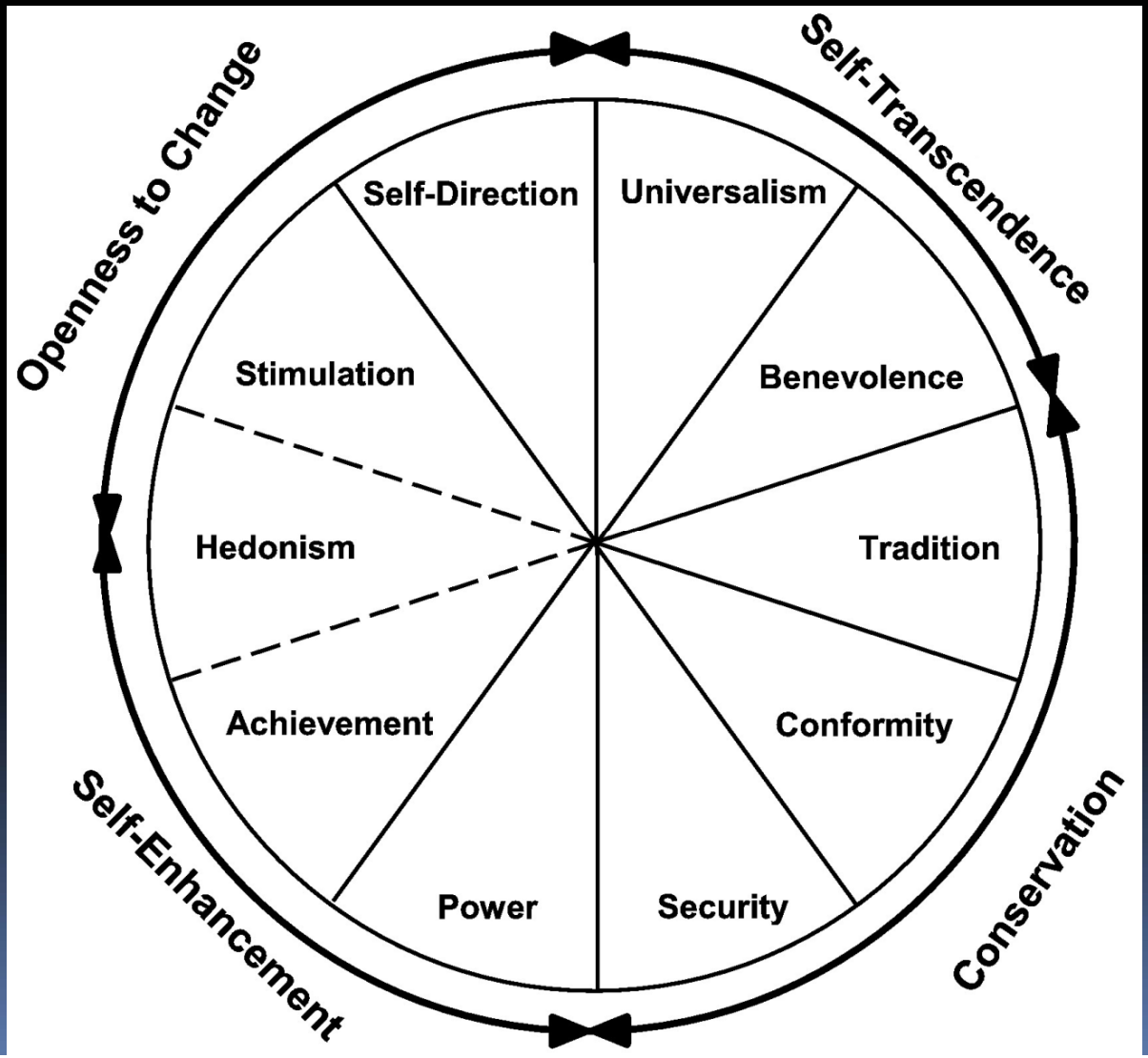
Social norm vs behavioral pattern

- Behavioral pattern:
  - Quick reaction to environmental changes
  - Observable
- Social norms
  - Might be reactive to environmental changes
  - Not observable
  - Recognizable through communication

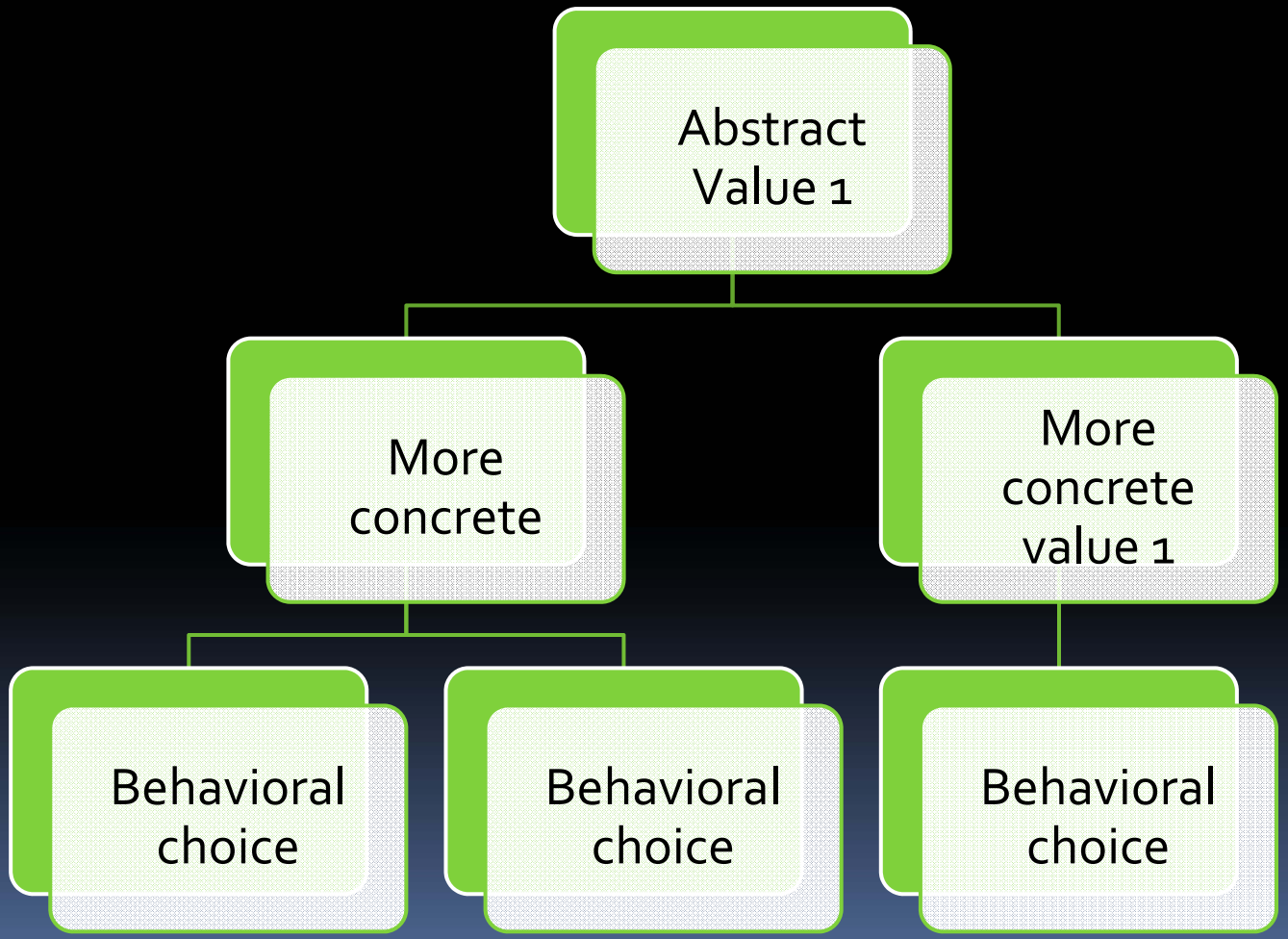
Designing a Norm Framework

- Individual values as stable criteria
- Complex agents

Schwartz value model

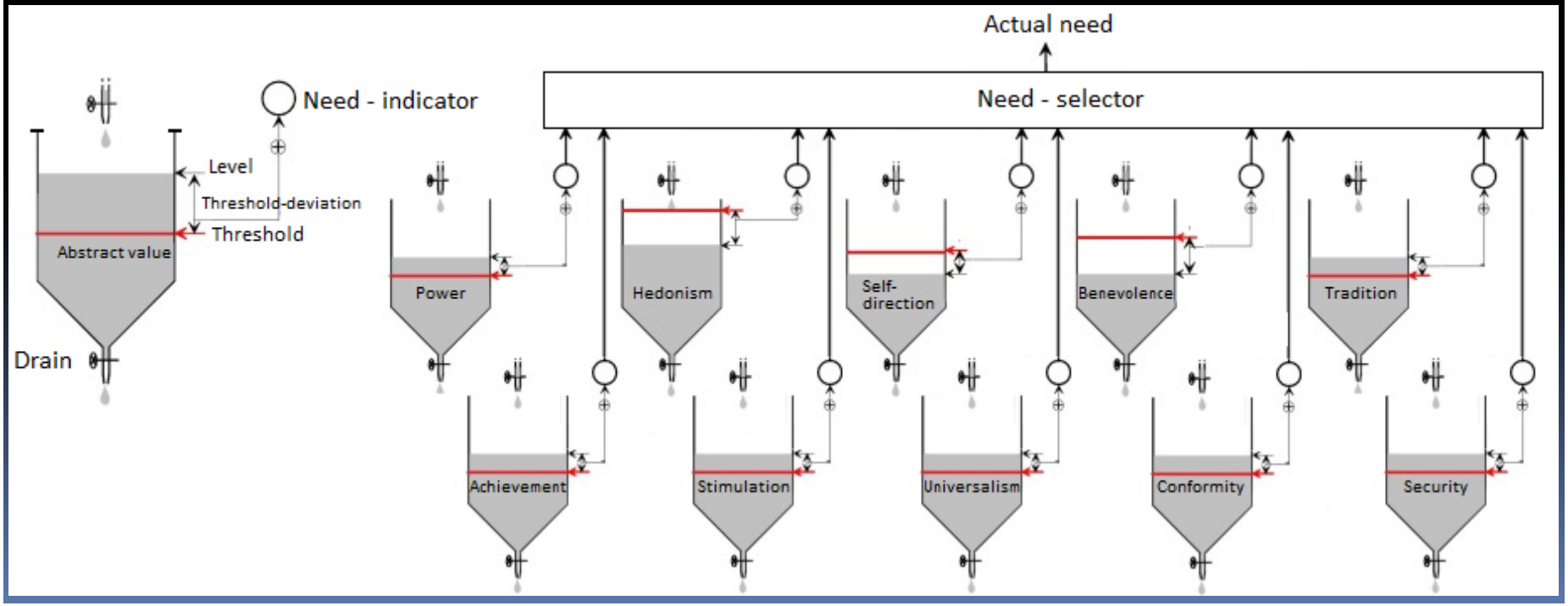


Value tree


Abstract Value 1
More concrete
More concrete value 1
Behavioral choice
Behavioral choice
Behavioral choice

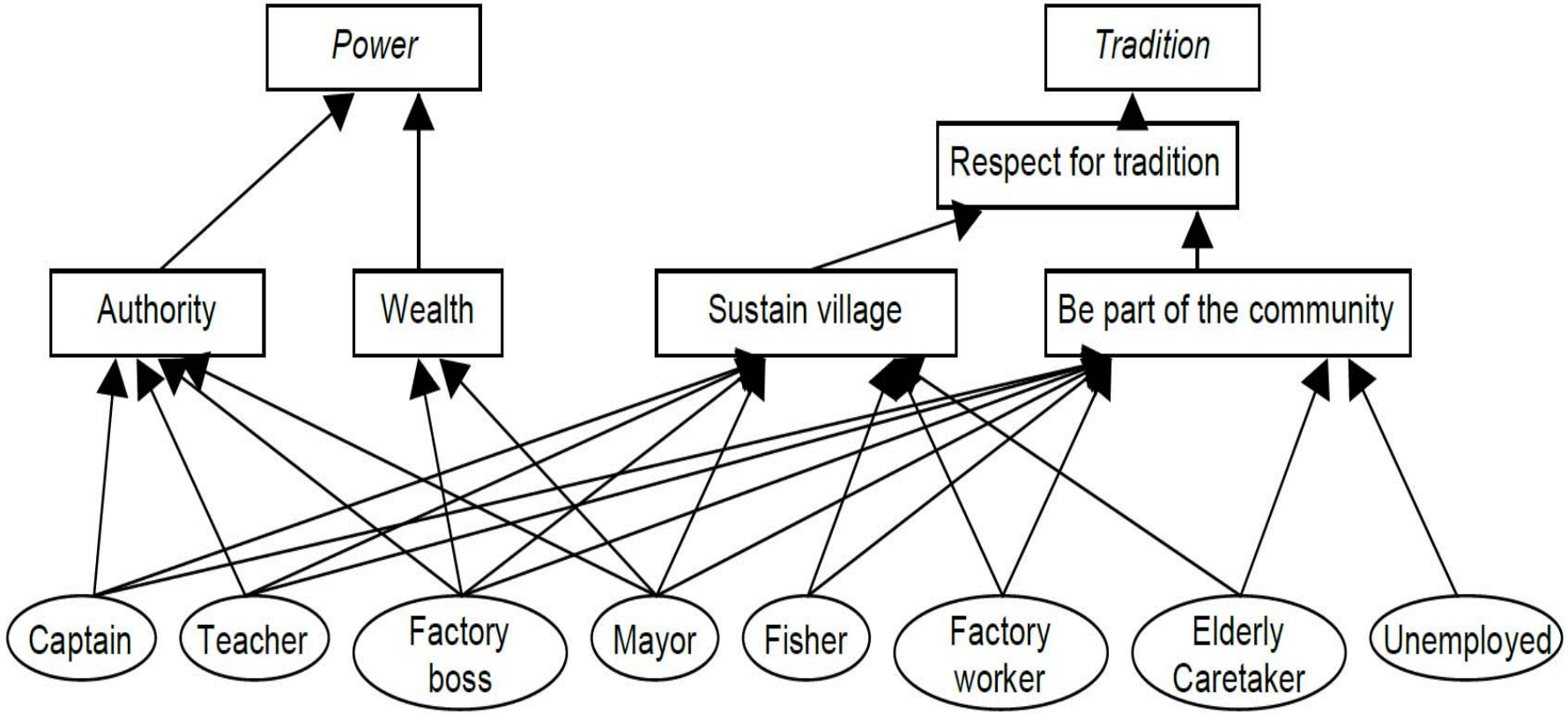
Personal value framework

- Water tank model for personal values



A sample of value trees

- Job selection



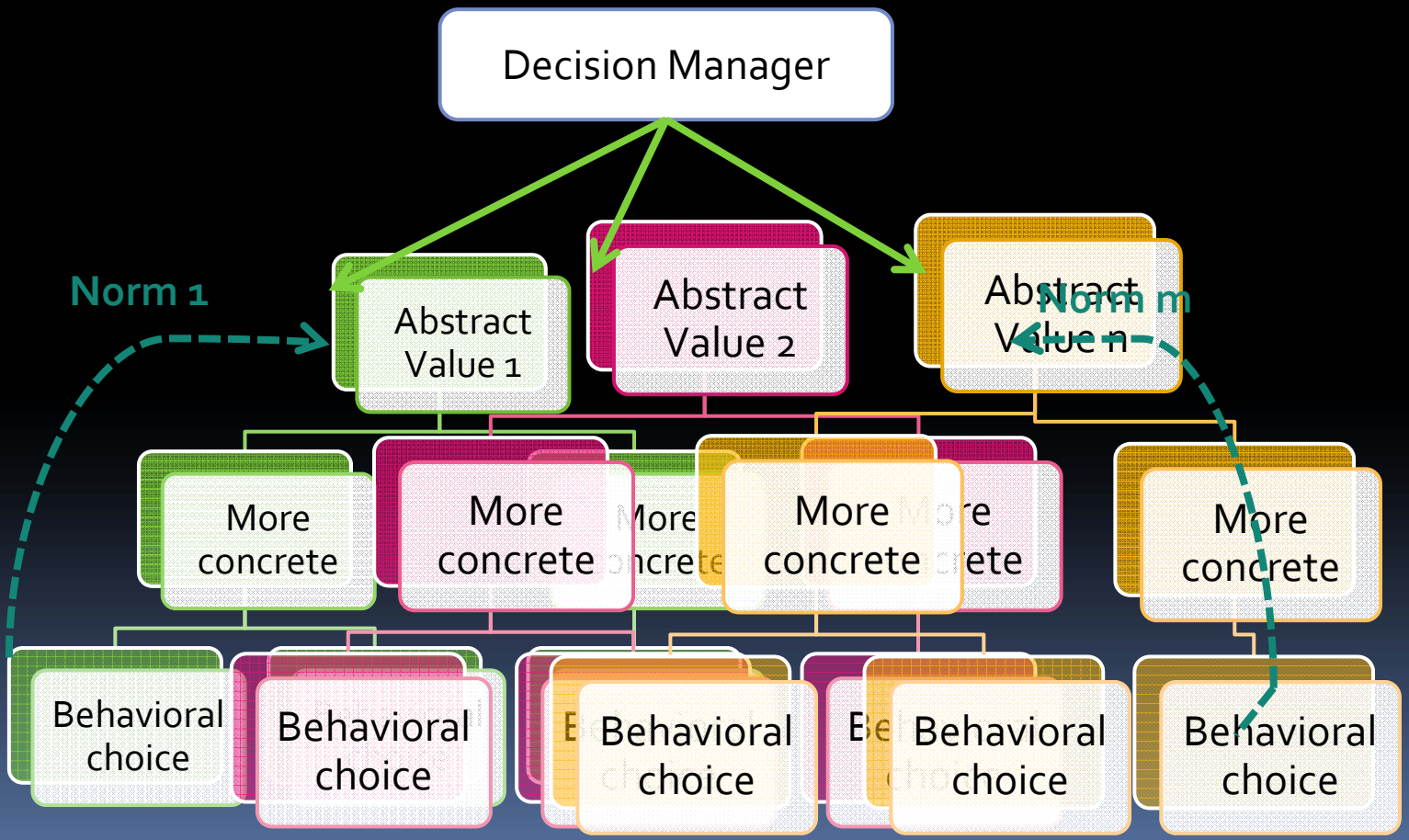
Result of Value Framework

- S. Heidari, M. Jenson, F. Dignum, "Simulation with Values", SSC, 2018.

Norm Framework

- Based on individual values
- Norms are shortcuts for values

Norm and values

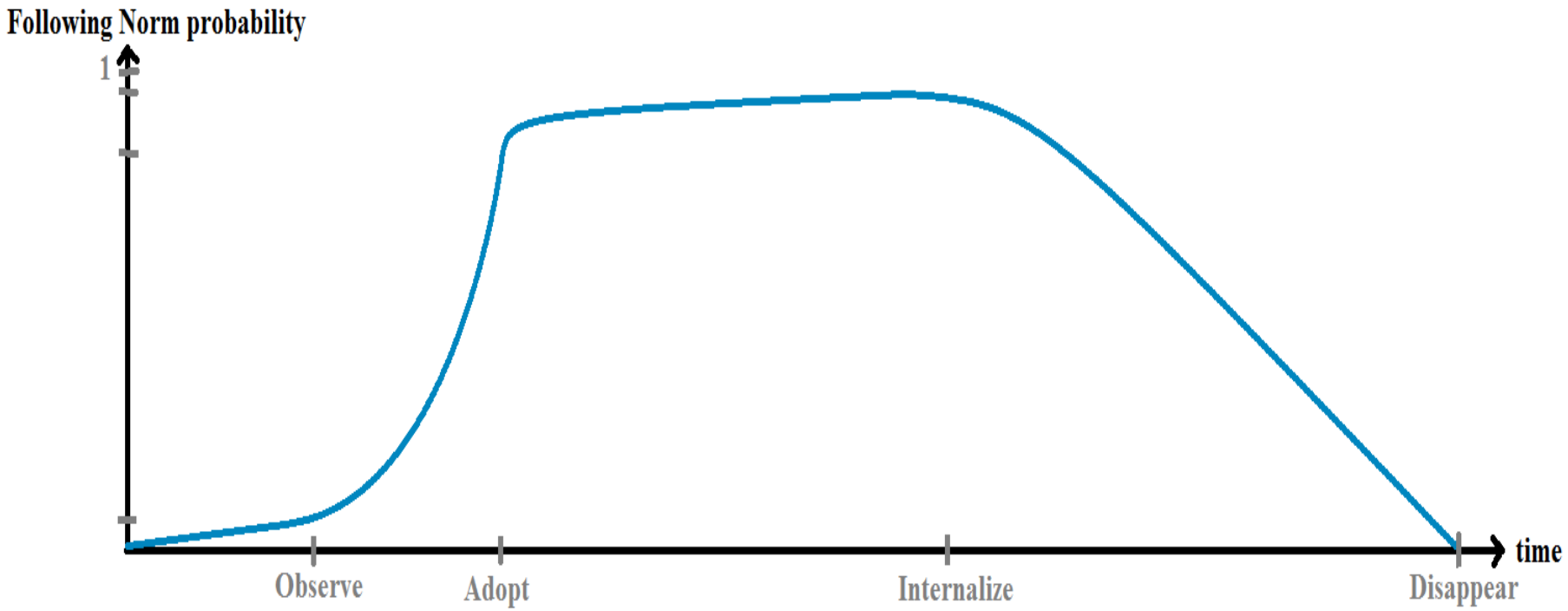


Norms in decision making

- The more a normative behavior exist (observed), the higher is the chance of accepting and following it
- Considering
  - Personal preference
  - Norms of other groups
  - Norms of previous groups
  - Norms of current group

Normative decision formula…

- X : probability of following normal action



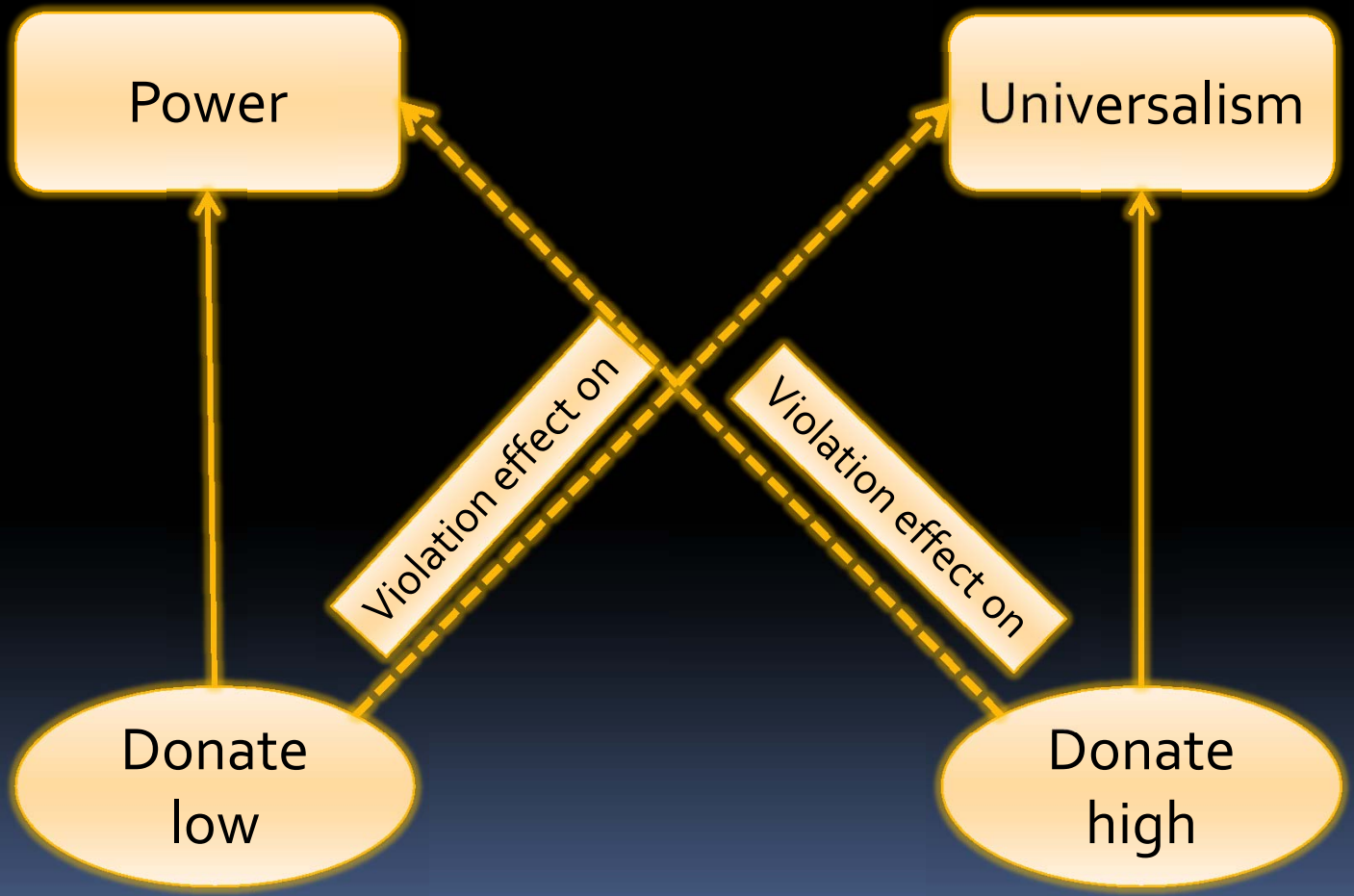
Simulation

- Start simple: focus on norms around donation

Simulation

- Agent
  - Values and norms
  - Decide donation%
- Groups
  - Difference sizes

donation tree

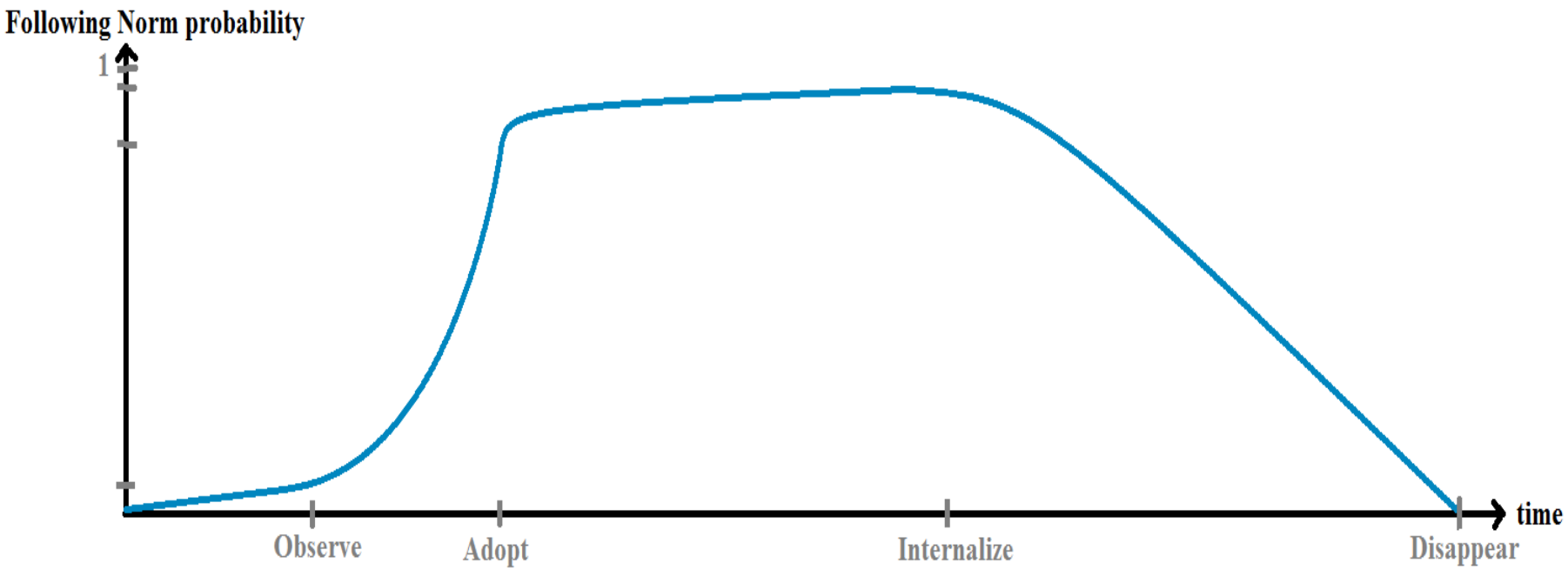


Normative decision

- $|donation| =$
  $X_{current\ group} *$ groupNormativeAmount +
  valueBasedProb $*$ myValueBasedDonation +
  $X_{other\ group} *$ otherGroupNormProbAmt +
  $X_{previous\ group} *$ prvGrpNormProbAmt;

Normative decision formula…

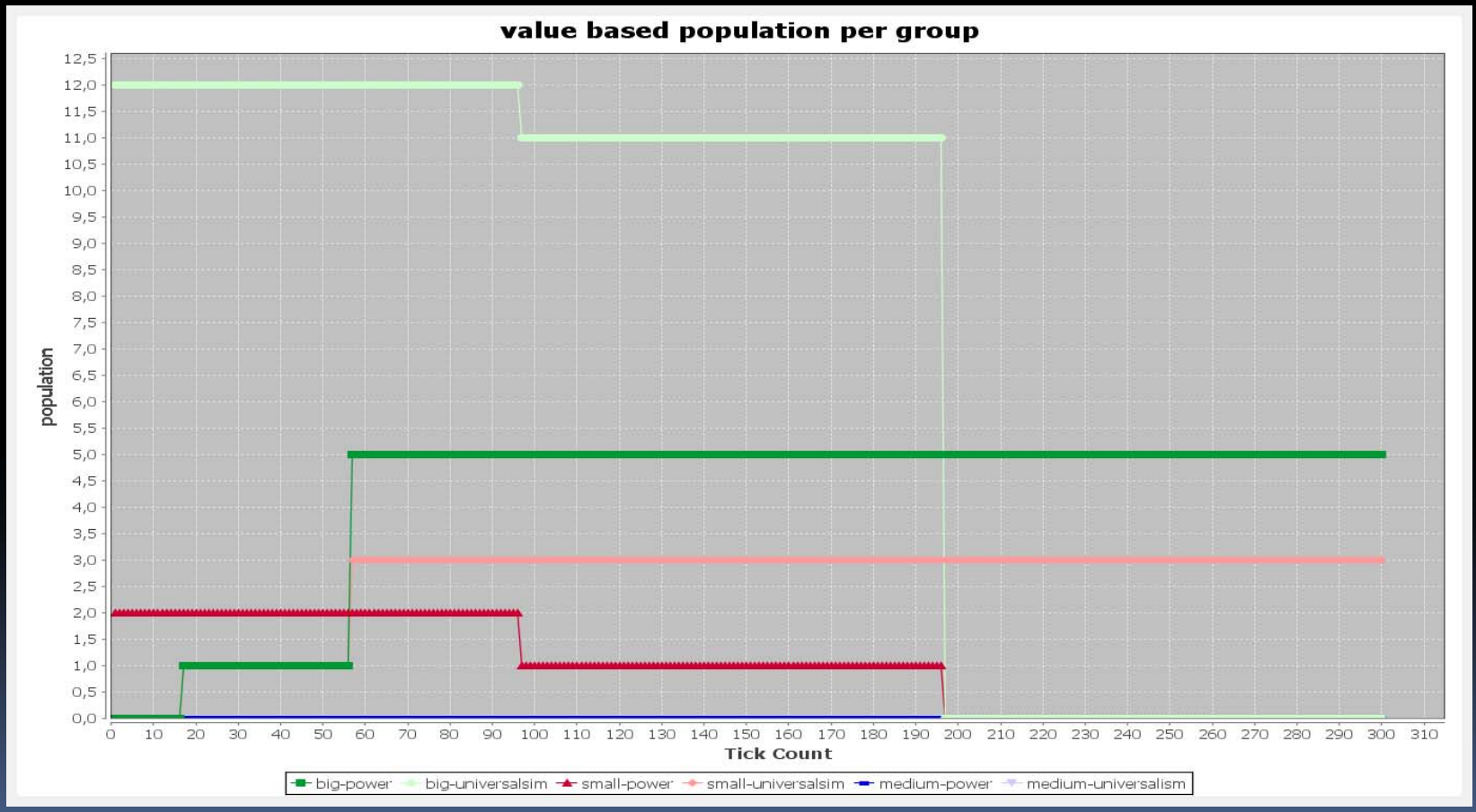
- X : probability of following normal action



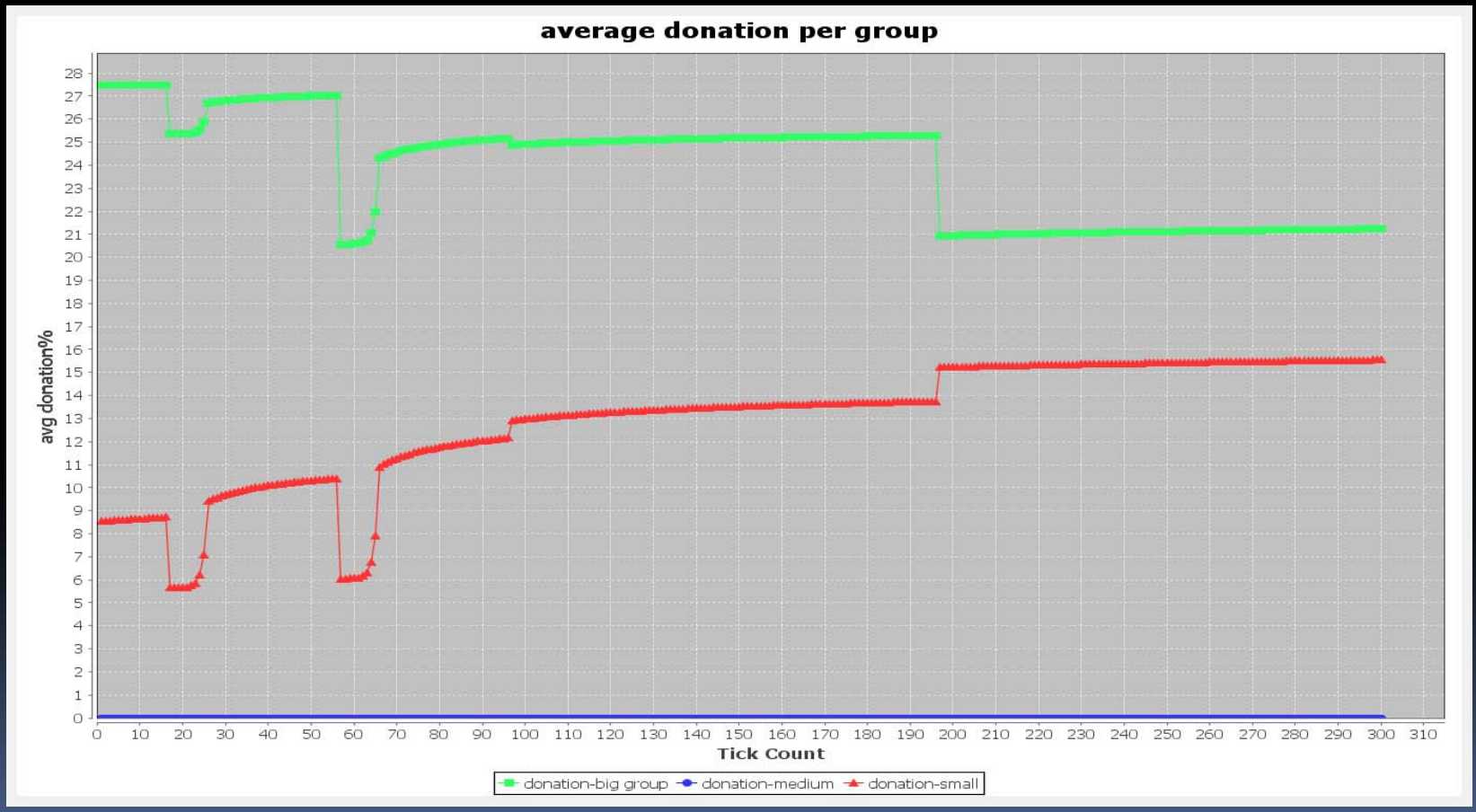
Normative decision, sample function

- X : probability of following normal action
- Observation phase:
  - $X = \frac{0{,}001}{repetition\ time}$
- Adoption phase:
  - $X = e^{(repetition\ time\ -10{,}32)} - 0.00028$
- Internalization phase:
  - $X = 1 - {}^{1}/_{(repetition\ time)^{0.5}}$
- Disappearing phase
  - $X = 1/(1+0.0078*0{,}5^{25-not\ repeated\ time})$

Results


value based population per group
population
Tick Count
big-power
big-universalsim
small-power
small-universalsim
medium-power
medium-universalism

Results


average donation per group
avg donation%
Tick Count
donation-big group
donation-medium
donation-small


Thank you!

Questions

s.heidari@uu.nl