Models of Method

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Contents

- Results
- What is the problem?
- Procedural model
- Dynamic model
- Petri-ish Mailbox model
Results

- Each proposed model *can* be used.
- Each proposed model has its limits.
- Therefore we should say what is the purpose of our modelling.
Intro

• I am an Amesh-man.
• What is Amesh?

• www.amesh.sk
• Amesh has a hypothesis.

• The social sciences/humanities resemble the natural sciences in that they use the core of analytical methods in similar ways in building and/or testing their theories.
What is the problem?

- We need to test the hypothesis.
- We need tools for testing.
So, what is a method?

• Method is:
  a) General guide how to accomplish the goal
  b) System of activities which leads to the goal

• How can we model it?
Act I – Everything is procedure

- Method is a guide.
- Guide is general.
- Guide is abstract.
- Guide consists of concepts.
- Guide is a concept.
Concept vs. Procedure

- Skip the history.
- There is a difference between recipe and the cake.
- Transparent Intensional Logic
- Procedure – construction
Example

\[ \lambda (ir \ or) \ [ \ \lambda list \ \exists xy \ [[ir \ x] \ & \ [or \ y] \ & \]

\[ 42 \leq x + y + 2b + Rp \leq 44] \ &

\[ list = [ \ ^0Map \ (x,y,b)]]]]]

- Číhalová, Duží, Menšík – Logical specification of processes
Problems

- Small differences
- Guide does not have a truth value.
- We want a model of activities, too.

- Algorithms
Act II - Dynamics

- What is an instruction?
- States
- Problem
- Question
- Answer
Transitions

- What is a transition?
- Are there different kinds of transitions?
- How can we model a transition?
- What is an activity?
Graphs, graphs, gr...

- Transition is an arc.
- Instruction is a set of transitions.
- Transitions connect states.
- Theory of graphs is a natural choice.
Example

- Pick a natural number!
- Add to it the square of its successor!
- If the result is even, then divide it by 2! else add 1!
- Add the number of your siblings!
- Subtract the number of people in this room!
- Sing your national anthem as many times!
Problems

- Extensionality
- Extensionality
- Extensionality
- Small differences
Act III

- I like graphs.
- I don´t like limits.
- Story of a mailbox.
- State is more like a mailbox.
Executions

- Instructions are executable.
- So there are conditions for their executions.
- Let's put this feature in a model.
Mail-box model

- States can have values.
- States are not identified by the values.
- Method has phases.
- Phases are depicted by the values in states.
- Every executable transition is made.
Example

- Sum numbers $a$ and $b$!
- Subtract number $d$!
Problems

- Extensionality
- Compositionality
- Small differences
And the winner is?

- It really depends on the goal.
- Different models are not rivals.
- They should be teammates.
- Together, they can be a strong team.

Methods -----
• Thanks for your attention.
Questions?