

WHY MODEL?

(Data modeling)

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WHAT'RE YOU GOING TO LEARN TODAY?

- What are models?
- When should we model?
- Why many models?
- Exercises
- What's next?

DEFINITION

"Models are formal structures represented in mathematics and diagrams that help us understand the world."

MOTIVATION

"Practice [modeling] and you will better understand complex phenomena."

What are "complex phenomena?"

DÖRNER'S DEFINITION



1. Problem is polytelic
2. Variables evolve dynamically
3. Variables are interdependent and compounded
4. There is no clear problem definition
5. There is no single cause and effect

TYPES OF MODELS

- *Simplifications of the world*
(=abstractions)
- *Mathematical analogies*
(=functions)
- *Exploratory artificial constructs*
(=simulations)

Models must be "tractable" (apply logic). What about metaphors?

EXERCISE 1

Test Dörner's list:

- AI
- Covid
- Climate change
- Capitalism
- Communism
- Electric cars
- Zombies

MANY-MODEL THINKING

"We achieve wisdom through a multiplicity of lenses."

CRITERIA FOR MANY-MODEL THINKING

"The success of many-model thinking depends on a degree of separability."

EXERCISE 2

Analyse a recent decision you've made:

- Which model did you use, and why?
- If you used only one model, why?

WHAT'S NEXT?



IN THE COURSE

- Lecture "Decision intelligence"
- Data vs. models (2 optional articles)
- When you should model (REDCAPE)

YOUR CHALLENGES

What?	When?
Read ch. 2 "Why model?"	Aug 31
Complete 2nd test challenge	Aug 31
List possible research questions	Sep 2
Check FAQs x 2 in GitHub	n.d.
Ask questions (class/GitHub)	n.d.
*) <i>do this every week until December</i>	

ANY QUESTIONS?



This presentation is available online.