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Transport, Infrastructure and Logistics - ChoosingTheories & Methods

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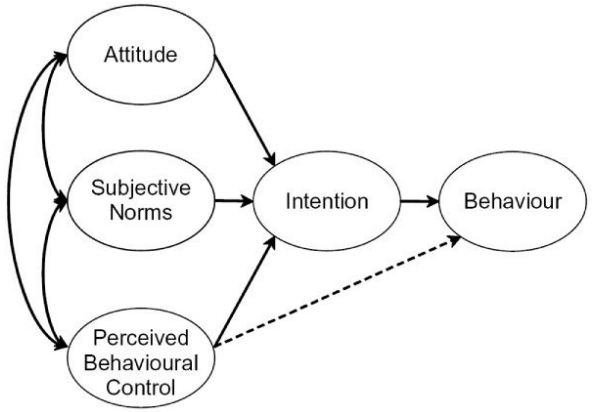
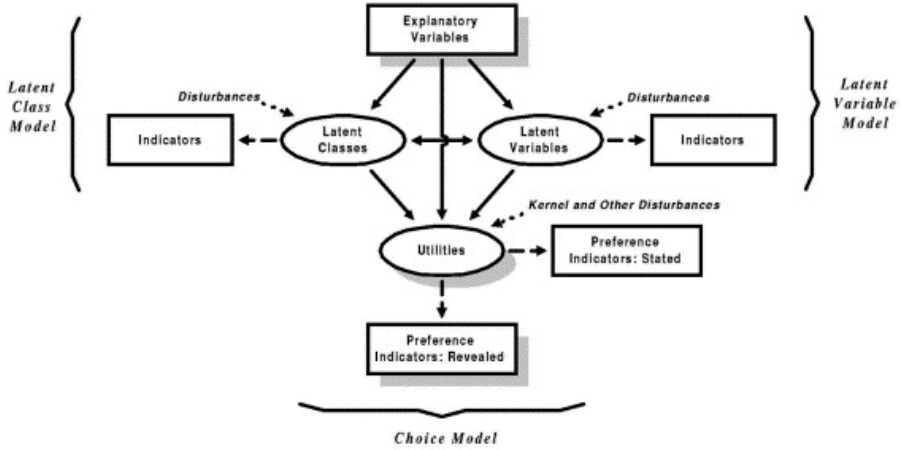
(in collaboration with Bert van Wee, Eric Molin, Oded Cats)

Main focus: guidance, no catalogue

- (Almost) any PhD thesis: theory
- Can be:
  1. A specific theory or a combination of theories
  2. A theoretical framework
  3. Or a combination of 1 and 2



Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50, 179–211



Walker, J. and M. Ben-Akiva (2002), Generalized random utility model, *Mathematical Social Sciences* 43, 303-343

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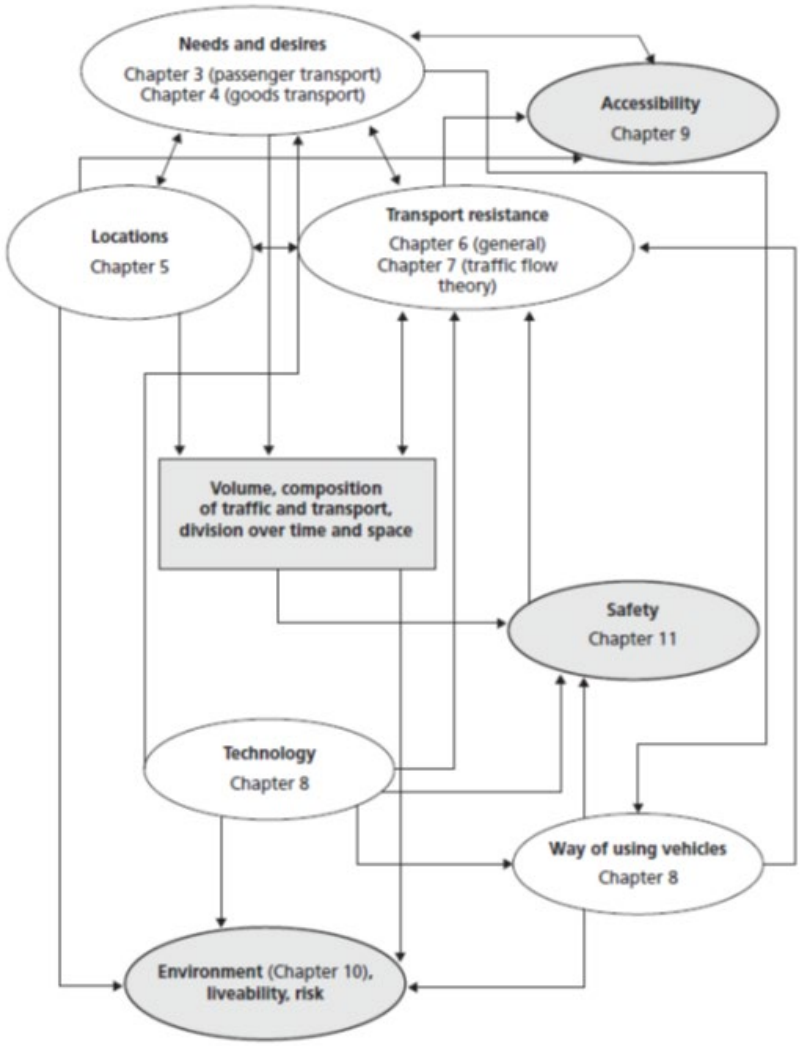
A Conceptual Transport Model



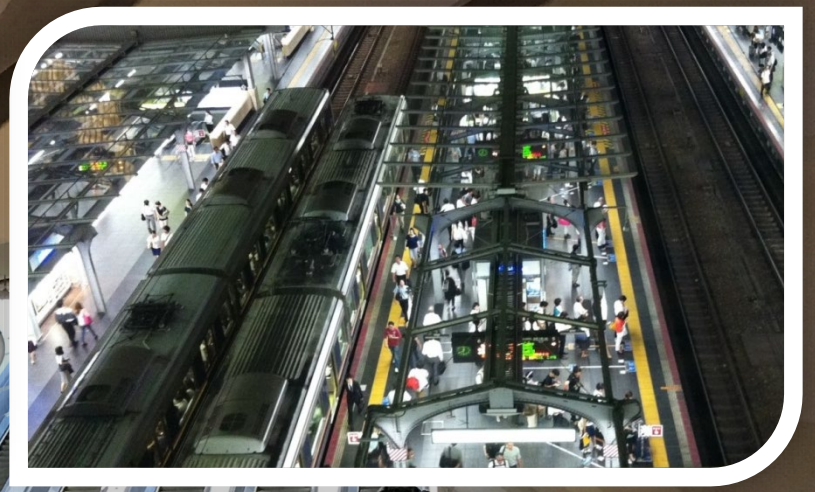
Note: The corresponding chapters of this book are depicted in the figure. Thin-lined ovals with no filling are determinants for transport and traffic volume and effects. Thicker-lined ovals with shaded filling are transport and traffic effects. The rectangle represents transport and traffic volume and composition divided over time and space.

Figure 2.1 A conceptual framework for factors having an impact on transport volumes and the impact of the transport system on accessibility, the environment and safety

Social science perspectives

- A. explorative vs theory testing research
  - qualitative vs. quantitative research
- B. quantitative research
  - levels of measurement
  - measuring single and multiple indicators
- C. multivariate analysis techniques
  - modeling direct effects by regression analysis
  - modeling indirect effects by structural equation modeling
  - modeling latent variables by factor analysis
- D. choice data
  - revealed choice versus stated choice data
- E. discrete choice models
  - basic logit model (MNL) vs. advanced choice models
    - e.g. mixed logit, latent class, hybrid choice models

Engineering Science perspectives



Network, operations, behaviour

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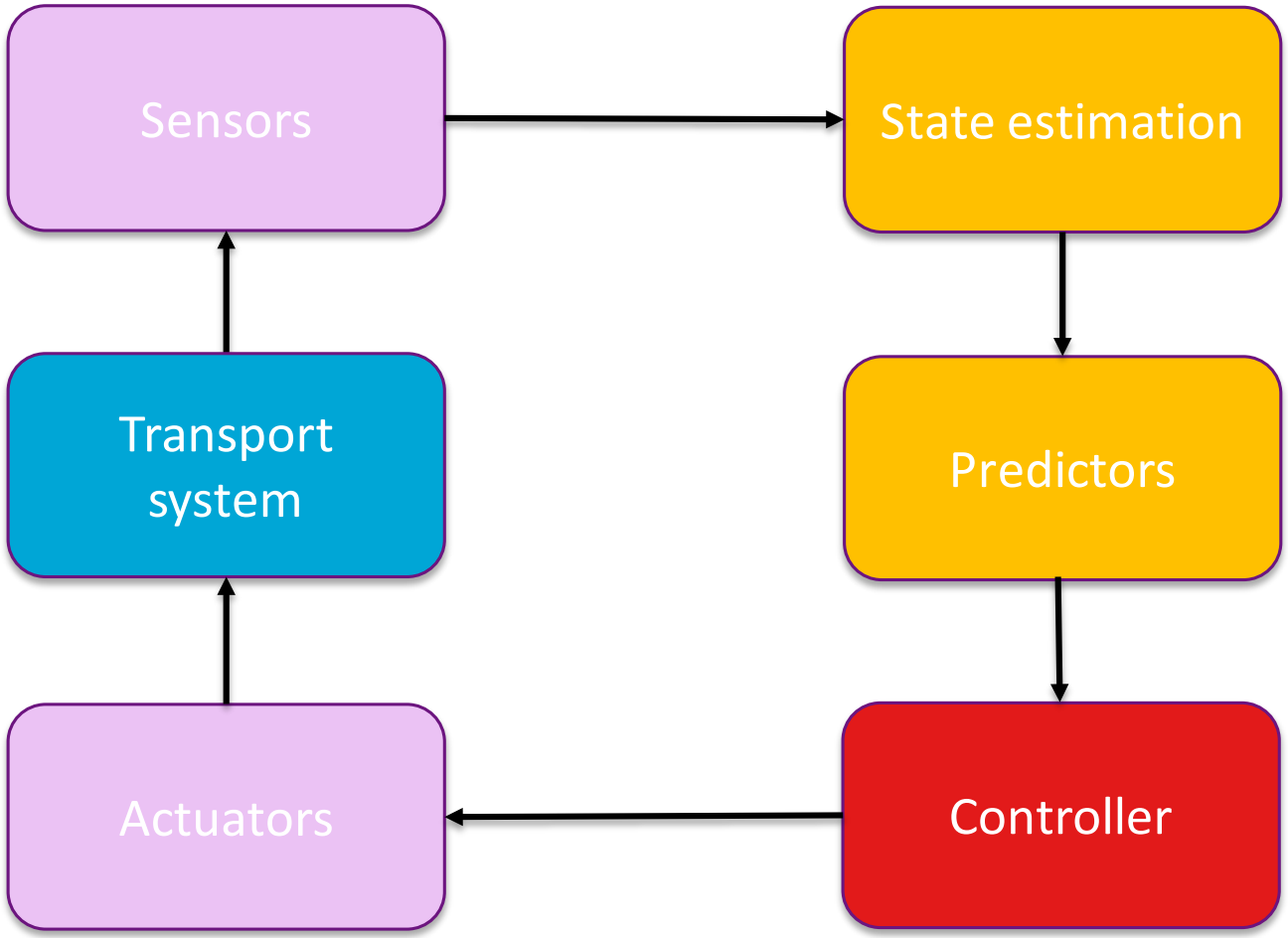
Predictive management



Very Important:

- Make theory/ theories, approaches, explicit
- Plus WHY!