LAW, PREDICTION AND UNCERTAINTY

Prof. dr. Mireille Hildebrandt

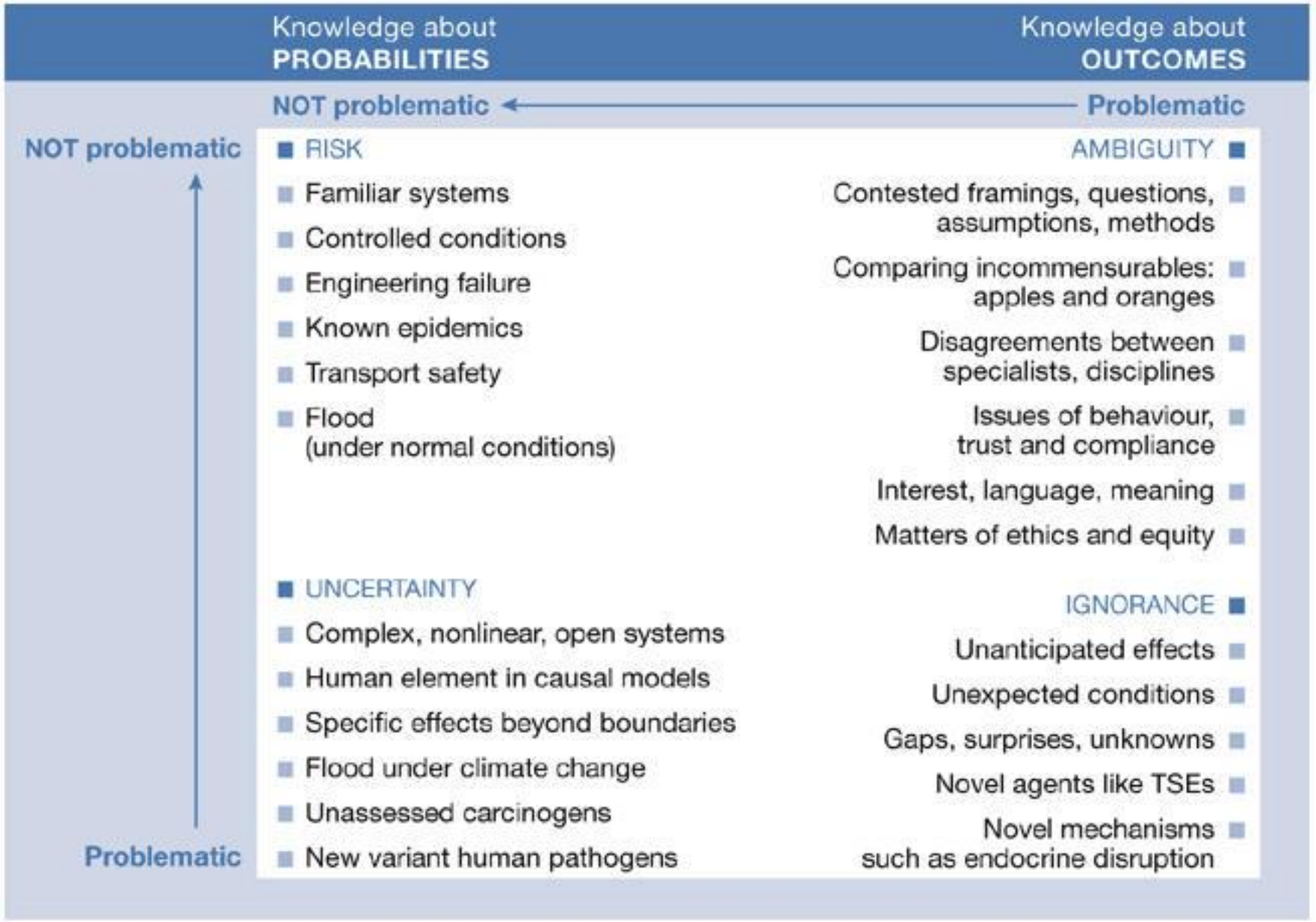
- Nietzsche: „Erklärung" nennen wir's: aber „Beschreibung" ist es (in: 112 in *Die Fröhliche Wissenschaft*)
  - *Causality is an attribution, often informed by post hoc information*
  - *Data leakage: prediction turns out to be a description based on post hoc information (Medvedeva 2022, Kapoor & Narayanan 2022)*
- Niels Bohr: Prediction is difficult, especially when it's about the future
  - *Crucial importance of 'out of sample testing'*
- Gabor: The best way to predict the future is to create it
  - *Our present futures impact the future present (Hildebrandt/Esposito)*
  - *This also concerns the performative effect of legal norms*
  - *If machines define a situation as real, it is real in its consequences (Hildebrandt/Merton), thus affecting the attribution of legal effect*

What's next?

- Staying smart in a smart world (Gigerenzer)
  - *Difference between risk and uncertainty*
  - *Stable environments and the distribution of training and test data*
- Legal certainty, multi-interpretability and contestability
  - *Ruling the future from the past*
  - *The uncertainty of the past*
- Open texture, adaptiveness and uncertainty
  - *Why prediction of law won't work as claimed*

What's next?

- Staying smart in a smart world (Gigerenzer)
  - *Difference between risk and uncertainty*


Knowledge about
PROBABILITIES
Knowledge about
OUTCOMES
NOT problematic
Problematic
NOT problematic
Problematic
RISK
Familiar systems
Controlled conditions
Engineering failure
Known epidemics
Transport safety
Flood
(under normal conditions)
AMBIGUITY
Contested framings, questions, assumptions, methods
Comparing incommensurables: apples and oranges
Disagreements between specialists, disciplines
Issues of behaviour, trust and compliance
Interest, language, meaning
Matters of ethics and equity
UNCERTAINTY
Complex, nonlinear, open systems
Human element in causal models
Specific effects beyond boundaries
Flood under climate change
Unassessed carcinogens
New variant human pathogens
IGNORANCE
Unanticipated effects
Unexpected conditions
Gaps, surprises, unknowns
Novel agents like TSEs
Novel mechanisms such as endocrine disruption

Knowledge about Probability

- Risk (or known probability):
  - *If one can assume that the distribution of training data is the same or similar as the distribution of future data*
- Uncertainty (future probability distribution is unknown):
  - *Modelling human behaviour (e.g. judging) is perhaps fun but unreliable by definition (as humans anticipate the consequences of their actions, cf. the Goodhart effect)*

Knowledge about Outcome

- Ambiguity:
  - *Legal norms are defined by concepts with an open texture, core legal concepts are essentially contested concepts and that's not a problem to be solved (a bug) but the core of law and the rule of law (a feature): multi-interpretability and contestability, together with institutional closure are key to the law*
- Ignorance:
  - *Oftentimes we cannot establish the facts, in that case the law is very pragmatic and turns to the burden of proof (who, how) to ensure both reliability and fairness*

What's next?

- Staying smart in a smart world (Gigerenzer)
  - *Stable environments and the distribution of training and test data*

What's next?

- Stable environments and the distribution of training and test data
  - *Closed systems, e.g. games*
  - *In a constitutional democracy a gap between the distribution of training and test data is desirable: 'rechtsontwikkeling'*
  - *So, high accuracy could stifle the development of the law*
    - This would relate to the issue of 'isomorphism' in the context of legal informatics
  - *Simultaneously, development of the law should not be based on incorrect statistical inferences but on interpretation, argumentation and deliberate decision-making*
    - This is where legal informatics may have an advantage, though it still freezes the future by scaling the past (due to reliance on knowledge representation and logic programming)

What's next?

- Legal certainty, multi-interpretability and contestability
  - *Ruling the future from the past*

What's next?

- Ruling the future from the past
  - *Enabling the future is key to the law*
  - *Allowing individuals to foresee the consequences of their actions (legal certainty)*
    - Precisely because legal norms bind all those who share jurisdiction
  - *This assumes/requires interpreting*
    - The norm in light of relevant action
    - The action in light of applicable norms
  - *Interpretation is neither a matter of logic nor of causality or arbitrary will (due to the multi-interpretability of the norm and the action)*
  - *It requires a jump (Scholten, Kant) from rule to facts and back (implying contestability):*
    - This is about creating and sustaining meaning, not about 'information in the CS sense'
    - Ambiguity is key here, both intended and unintended

What's next?

- Legal certainty, multi-interpretability and contestability
  - *The uncertainty of the past*

What's next?

- The uncertainty of the past
  - *The meaning of the past is determined at present, with an eye to the future*
  - *We have no unmediated access to the past, this applies to both norms and facts*
- Current versions of the past are proxies, they are not the past
  - *Using ML (NLP) implies a corpus of legal texts deemed the ground truth*
  - *Ground truth, however, is a proxy (consisting of historical data)*
  - *Ground truthing is one of the key design decisions in predictive analytics*
  - *In the case of legal text corpora the missing data are:*
    - Real life experience that informed the text and is informed by it
    - Development of the relevant legal norm in real life
    - Wittgenstein: the formulation of a rule is not the rule, to follow a rule is not the rule
    - Hart/Dworkin: open texture of legal concepts (H), decisive role of discretion (D)
- The uncertainty of the past is not equivalent with post-truth nonsense (not anything goes)
  - *The uncertainty relates to ambiguity, open texture, multi-interpretability and contestability*
  - *To get on with life uncertainty must be faced, addressed and decided upon (closure)*
  - *Rule of law offers institutional checks and balances to combine contestability with closure*

What's next?

- Open texture, adaptiveness and uncertainty
  - *Why prediction of law won't work as claimed*

What's next?

- Why prediction of law won't work as claimed
  - *Back to Gigerenzer and Stirling*
    - this is about uncertainty and ambiguity, not about known probability
    - Concept drift and data drift (only traceable based on past dirft)
  - *Cantwell Smith on 'reckoning and judgment'*
    - Data is not what it represents, registers, is a trace of
    - Modelling of 'reality' is not reality
    - Verification of the model does not close the gap between model and reality
  - *Using predictive analytics/causal predictors to reduce backlog of the courts:*
    - Will be gamed, yes
    - Will prioritize whatever it has modelled as the more obviously a violations