Chapter 1: Intro and Objections

1 Simple Legal Probabilism

Legal probabilism, in the simple version, focuses on the probability of liability as the main criterion for trial decision-making. If this probability is sufficiently high, the decision should be against the defendant, and otherwise it should favor the defendant. Where the threshold is set depends on cost/benefit analysis or utility maximization.

So, legal probabilism assumes that:

- practically, we can determine the probability of liability with some degree of precision
- theorethically, the probability of liability is a good measure of the overall uncertainity about the disputed factual issue

Both these assumptions can be questioned. So we have:

2 Challenge: We do not have the numbers

The probability of liability is determined starting from a prior and via successive updates using Bayes' tyheorem. Bayesian networks can be used in complex cases.

Critics of legal probabilism complaint that it is difficult to find all the numbers required by the probability tables of a Bayesiaan network. So, then, often these numbers are inserted as guess work, educated guesses or simply becaue they cannot be left blank.

Unclear where our book will address this challange. Use comparative probability? Translate numerical results into qualitative results? How?

3 Challenge: not just high probability

Besides high probability, other dimensions (should) guide decision-making and they might not be reducible to the probability of liability. Some of these other dimensions are:

- How certain are we about the probability of liability? (Higher-order uncertainty)
- How good (specific, coherent, plausible, explanatory powerful) is the story presented?
- Did the defense challenged the other party's story? Did the story survive the challenges?
- Is any evidence missing? Is the evidence presented representative of both sides or was the evidence collected in a biased or skewed manner?

A more sophisticated version of legal probabilism, then, should be able to do at least two things: first, formally model these additional dimension using the language of probability (or determine to what extent they fall outside the scope of probability theory and cognate theories); and second, show why relying on these additional dimensions in decision-making does foster important values, such as the accuracy and fairness of trial decisions.

3.1 Challenge 2: Evidence is evaluated holistically.

The chapter on story coherence should address this challange.

3.2 Challenge 3: Learning isn't updating

Ronald Allen complains that Bayesian updating isn't an adequate model of what goes on in the courtroom when evidence is presented. The decision-makers do not start from priors and update them based on the pieces of evidence presented. What happens is more complicated and cannot be modeled by Bayesian updating. *The chapter on cross-examination and arguments should address this challange.*

3.3 Challenge 4: Trials are adversarial

Trials are often adversarial. Evidence is examined and cross-examined. How can this adversarial process be modeled probabilistically? *The chapter on cross-examination and arguments should address this challange.*

3.4 Challenge 5: No evidence that probability reduces errors

It is clear that people make probabilistic mistakes in reasoning, but does this show that mistaken convictions are caused by these probabilistic mistakes? There is no evidence of that. In what way does probability actually improve the accuracy of legal decisions? *Discussion about accuracy and fairness should address this challange*

4 Structure

So we can envision four central chapters:

Chapter: Higher-order probability See existing chapter and paper on higher-order legal probabilism.

Chapter: Narratives, specificity, coherence etc. See Rafal's paper on coherence.

Chapter: Cross-examination and arguments See Marcello's paper on cross-examination and Bayesian networks, and also paper on awareness growth and Bayesian networks.

Chapter: Gaps in Evidence See existing paper on gaps in the evidence.

This more sophisticated version of legal probabilism should answer some of existing challenges to simple legal probabilism.