How to represent beliefs?

- **Straight Bayesian**
  Beliefs as Probabilities
  - Beliefs as *intervals* of probabilities
  - **Inner/Outer Measures**
    from *one* measure defined on a *subalgebra* of worlds
  - **Upper/Lower Probabilities**
    from *set* of measures defined on *full* algebra of worlds
- **Possibility Measures**
  Worlds as fuzzy sets
- **Ranking functions**
  Beliefs as mappings from worlds to an ordinal
- **Relative Likelihood**
  Set of worlds as poset
- **Plausibility Functions**
  Beliefs as mappings from worlds to posets

How to update beliefs from evidence?

- **Simple conditioning**
  given evidence in form $P(E) = 1$
- **Jeffrey’s Rule**
  given evidence in form $P(E) = \alpha$
- **Minimum Relative Entropy**
  given evidence in form $P(E|\neg E') = \alpha$
- **Dempster’s combination rule**
  (on Möbius transforms of belief functions)

**Dempster-Shafer Theory**
Belief functions as probability measures but with weaker axioms