The many faces of probability

Frequentist probabilities

- The probability of an event as the limit of its relative frequency in a large number of trials
- Probabilities describe objective properties of the physical world
- Probabilities only apply to repeated events

Cox probabilities

- Probability is an extension of formal logic, and allows us to discuss events about which we lack complete information
- Probabilities describe states of knowledge, not real properties of the world
- Probabilities apply to any statement for which we lack complete information

Probabilities as extensions of logic

A implies B

What does B say about A?

A: it is raining

B: There are clouds

If A is true, then B is true

If B is true, my assessment about the plausibility of A should change?

How much should it change?