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## Probability, Subjective, and Objective

The concept of probability is ubiquitous. We feel safe traveling by plane because we believe that the probability of an accident is small; we buy fire insurance because we believe that, although the probability of a fire is small, it is not small enough to be ignored. But what *is* probability? What does it mean to say, for example:

The probability that the coin will land Heads is 50%.

The answer is that it might mean two different things, depending on whether one takes “probability” to mean *subjective probability* or *objective probability*.

### Subjective Probability

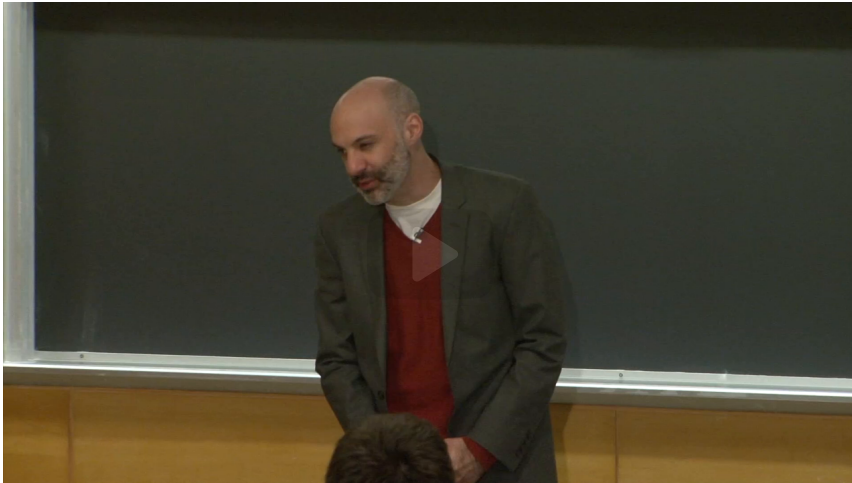
Claims about subjective probabilities are claims about someone’s *beliefs*, and, in particular, about the *degree* to which someone believes something. For example, the claim: “Smith’s subjective probability that the coin will land Heads is 50%.” means something like: “Smith believes to degree 0.5 that the coin will land Heads”. (I’ll have more to say later about what it means to believe something to a degree.)

### Objective Probability

Claims about objective probability, in contrast, are *not* claims about what someone believes. When one talks about the objective probability of an event, one is meant to be describing a feature of the world that does not depend on the beliefs of any particular subject. Consider, for example, the chemical element Seaborgium. One of its isotopes,  $^{265}\text{Sg}$ , has a half-life of 8.9 seconds. This means that if you take a particle of  $^{265}\text{Sg}$  the probability that it will decay in the next 8.9 seconds is 50%. When one speaks of probability in this context one isn’t talking about the subjective credences of any particular subject. One is describing an objective feature of the world: the half-life of  $^{265}\text{Sg}$ .

## Video Review: What is Probability?

[Start of transcript. Skip to the end.](#)



All right, welcome.

So today we will continue our explorations into the world of probability.

And today's session will be about the foundations of probability, and in particular, the issue of what it means

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