



Chance

Dan Hoek — PHI 371 Foundations of Probability and
Decision Theory — Princeton — April 2020

Examples

- *Gambling* Coins, Dice, Roulette wheels, Card Draws, Balls from An Urn “What is the chance of throwing 7 with two dice?”
- *Weather* “What is the Chance of rain tomorrow?”
- *Sports matches* “What is the chance the Patriots will beat the Rams?”
- *Physics* “What is the chance this Uranium atom will decay in the next hour?”

Nature of Chance

- What is chance?
 - Frequentism
 - Subjectivism
 - Primitivism
- Are there different kinds of chance?

Chance and Frequency

- Chances *predict* future frequencies.
- Observed frequencies can be used to *measure/ approximate* the chances.
- Reference Class problem
- One-off Probabilities

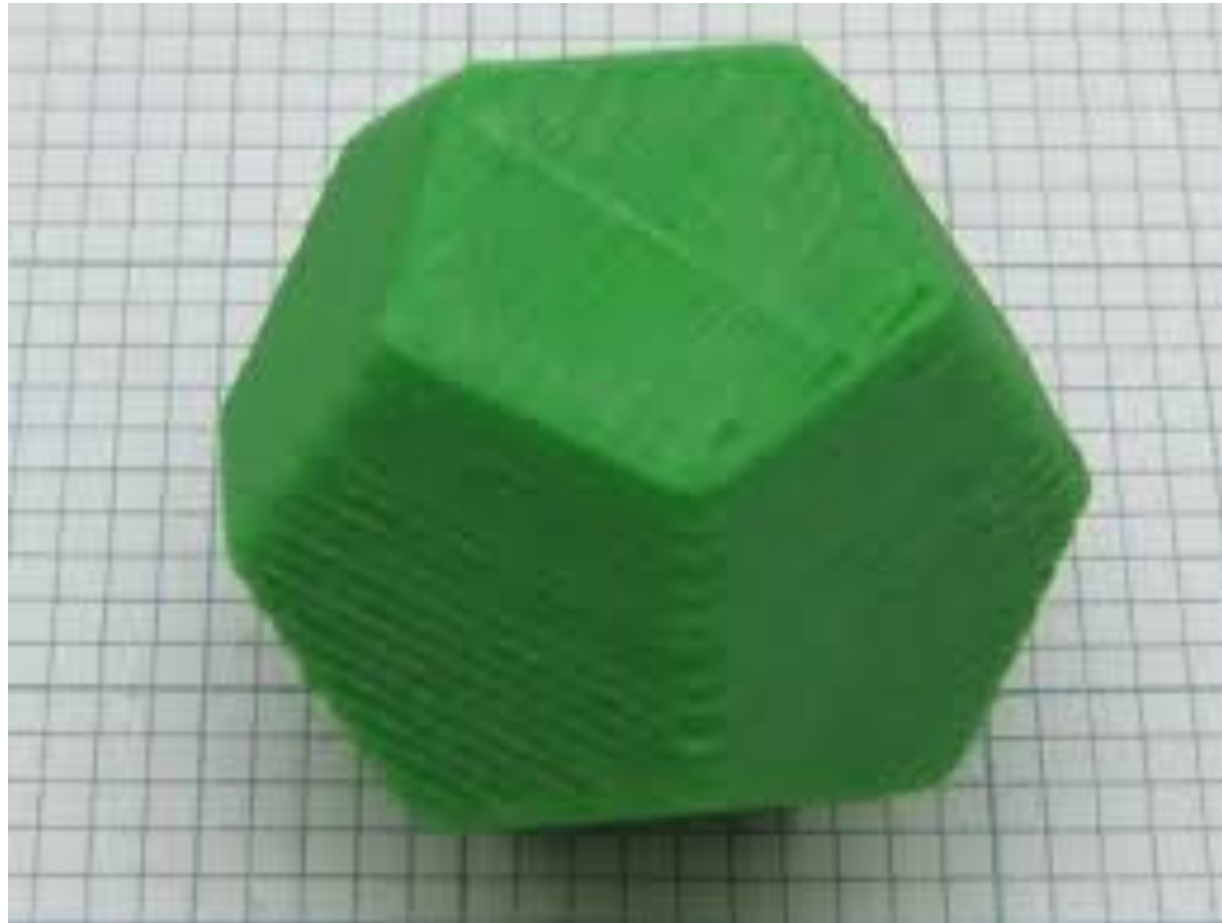
Chance and Determinism

- **Determinism:** “The total state of the universe + the laws of nature, determine the state of the universe at all later times”
- Are chances compatible with determinism?
 - Chance in the Casino
 - Chance in Statistical Mechanics
 - Chance in Biology
 - Chance in Geology

Chance and Credence

- What is the relationship between chances and rational credences?
 - “Rational credence should equal the known chances”
 - The Principal Principle
 - What justifies PP?
 - What is “admissible” evidence?

Michael Strevens: Chance and Symmetry



David Albert: Chance in Quantum Mechanics

