



BiophysTO Lunchtime Seminar Series

Date

Thursday
March 31st 2022
12:00 – 1:00 pm

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On evidence and probability

The various conceptions of probability can be divided into two broad groups: objective and 'epistemic' probabilities. Intuitively, objective probabilities are supposed to reflect objective features of the world, such as laws and frequencies, whereas epistemic probabilities are supposed to reflect states of knowledge/ignorance that agents or groups have, or should have, in conditions of uncertainty. Epistemic probabilities are supposed to reflect an agent's or group's states of knowledge in conditions of uncertainty. Epistemic probabilities are always related to evidence, and their value might be different relative to different bodies of evidence. On the common view, epistemic probabilities ought to reflect the nature of the evidence on which they are based. We argue that there are two main conceptions of the relationship between evidence and probability: the 'logical' and the 'psychological'. The 'logical' conception is by far the dominant view in the philosophical literature. In this conception, ideally, the evidence, jointly with rational principles and premises, should uniquely determine epistemic probabilities. Unlike in the 'logical' conception, in the 'psychological' conception, the evidence, jointly with rational principles and premises, does not uniquely determine epistemic probabilities. While, obviously, probabilities should always be based on the available evidence, they generally neither reflect it, nor are determined by it. The relationship between evidence and probabilities is open-ended and its exact nature depends on the context and the reasoning agent. The reasoning from evidence to probability is governed by know-how, which is the outcome of experience and training. The know-how of individuals and groups influence the way they conceive and process evidence and, thus, the resulting probabilities. Accordingly, depending on their know-how, different individuals/groups could rationally infer different probabilities from the same body of evidence. We argue that the logical conception is inadequate. In particular, unlike the psychological conception, the logical conception fails to reflect the important role that know-how and intuitions play in scientific reasoning, in general, and probabilistic reasoning, in particular. We also suggest that the psychological conception is on the right track and propose ways to develop it. How are the above considerations relevant for practicing scientists? While science is often presented as striving to realize the 'logical' conception of the relationship of evidence to probability, we believe that actual scientific practice in effect follows the teachings of the psychological conception.

Zoom Link:

Host: Anton Zilman

<https://us02web.zoom.us/j/89407663380?pwd=OFBMczlhWVZKbUswQzk3VXNkLzhGdz09>



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