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Rationalism

We have seen that frequentism cannot be correct as an account of objective probability. But if frequentism is not an option, what *is* objective probability?

One option is to embrace **rationalism**: the view that there is nothing more to objective probability than the Objective- Subjective Connection of Sections 6.1.1 and 6.3.2.

This means that a claim about objective probability is a claim about what a perfectly rational subject would believe, if she had perfect information about the past (but none about the future).

A rationalist account of objective probability is consistent with the idea that objective probabilities are not concerned with the psychology of particular subjects, since the demands of rationality need not depend on what anyone in fact believe.

It is natural to think that they instead depend on relevant features of the physical world. When we say, for example that ^{265}Sg has a half-life of 8.9 seconds, we're describing a feature of the physical world. But we're describing it indirectly, by saying that the physical world is such as to demand a certain rational stance. Specifically: the physical world makes it the case that the rational degree of belief to have about whether a particle of ^{265}Sg will decay in the next 8.9 seconds is 0.5 — assuming one has perfect information about the past, but none about the future.

Notice, however, that on a rationalist conception of objective probability it is not clear that the objective probabilities are always well defined. To see the worry, note that rationalism entails that the objective probabilities at t can only well-defined if there is a definite fact of the matter about what the *credences* of a perfectly rational agent should be, when she has perfect information about events prior to t (and no information about the future).

But recall that we were unable to identify an satisfactory version of the Principle of Indifference (Section 6.2.4). In the absence of such a principle it is not clear that there will always be definite fact of the matter about what a perfectly rational agent ought to believe.

Notice, in particular, that it is not clear that there is a definite fact of the matter about what a perfectly rational agent's "initial" credences should be — her credences in the absence of any evidence about the way the world is. And if our perfectly rational agent updates by conditionalization, then unclarity about initial credences can translate into unclarity about future credences, since the subject's future credences will only be well-defined if her initial credences, conditional on the relevant evidence, are well-defined. So the rationalist may need to be open to the possibility that there may not always be a definite fact of the matter about what the objective probabilities are.

I myself am a **localist** about objective probability.

I agree with the rationalist that there is no more to the notion of objective probability than the Objective-Subjective Connection, and I think the notion of perfect rationality is only well-defined in certain special circumstances; for example, circumstances in which there is an unproblematic way of deploying a Principle of Indifference.

I therefore believe that it is only in such circumstances that the objective probabilities are well-defined.

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