

Imprecise Decision Theories for Lockeans

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Contemporary epistemology theorizes about two main types of doxastic attitude: the categorical doxastic attitudes, known as *belief*, *disbelief*, and *suspended judgment*, and the graded doxastic attitudes, known as *credences*. A central question for the field is how these attitude-types relate, in particular for the rational agent [4]. Arguably, the answer that has gained the most attention is *the Lockean thesis*. This says that there is some (rational) credence $r : 0 < r < 1$, such that for any proposition p of which she is aware, a rational agent is permitted to (i) believe p iff she assigns it a credence $c(p)$ at r or above, (ii) disbelieve p iff $c(p) \leq (1 - r)$, and (iii) suspend judgment on p iff $(1 - r) \leq c(p) \leq r$.

The Lockean thesis relies on rational credences being ordered by \leq . While this works given the standard treatment of rational credence as *precise*, it does not if rational credences are allowed to be *imprecise*, e.g. in the sense of [6]. Without amendments, the Lockean thesis implies that an agent with an imprecise credence in a proposition is not permitted to have *any* categorical attitude towards that proposition. The present work explores ways in which we can generalize the Lockean thesis to accommodate imprecise credences, using tools and assumptions from epistemic decision theory.

Epistemic decision theory [e.g., 5] employs decision theory to theorize about epistemic norms. Epistemic decision problems are much like standard problems under uncertainty, except for certain requirements we put on the options and on the utility function. In the present setting, the option space consists of sets representing all possible categorical doxastic states the agent can have, given the propositions she is aware of (= that are contained in her *agenda*). The utility of a doxastic state is identified with its degree of *accuracy*. Given this, [2, 1] show that agents conform to the Lockean thesis iff their categorical doxastic state maximizes expected utility (accuracy). The task of generalizing the Lockean thesis then amounts to the task of finding an extension of Maximize Expected Utility suitable for imprecise epistemic choice.

I consider some familiar decision rules for imprecise choice, including (at least) E-admissibility [6], Maximality [7], and Γ -maximin [3], each of which is easily seen to generalize Maximize Expected Utility. As rules for epistemic choice, they give rise to distinct theories of the relation between rational categorical attitudes and rational credences (now understood as intervals computed from closed, convex sets of probability functions). I discuss some features that differ between the theories and which may tell for or against their suitability as doxastic norms. To exemplify: Under E-admissibility, a rational agent is (typically, see below) (i) permitted to believe p iff $\overline{C}(p) \geq r$, (ii) permitted to disbelieve p iff $\underline{C}(p) \leq 1 - r$, and (iii) permitted to suspend judgment on p iff there is $x \in C(p)$ such that $1 - r \leq x \leq r$. Yet in certain cases of agenda expansion, a change in categorical attitude is obliged despite credences remaining the same. Under Γ -maximin, certain cases of contraction (but not expansion!) of the agenda has the analogous effect. Other relevant differences between the theories discussed concern whether they tend to associate imprecision with obliged suspension or with permissiveness, and their respective predictions for categorical attitude change in response to credal update.

References

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