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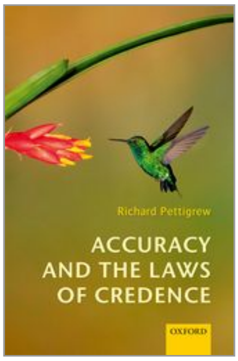

Accuracy and the Laws of Credence
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Print publication date: 2016
Print ISBN-13: 9780198732716
Published to Oxford Scholarship Online: May 2016
DOI: 10.1093/acprof:oso/9780198732716.001.0001

Howson’s robustness objection

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DOI:10.1093/acprof:oso/9780198732716.003.0007

Abstract and Keywords

This chapter responds to an objection raised by Colin Howson against Joyce’s original accuracy argument for Probabilism. Howson argues that the original argument is not robust under a different choice of numerical representation of maximal and minimal credence. This chapter shows that, in fact, it is.

Keywords: Colin Howson, convention, Probabilism

In the Introduction to this book, we chose 0 to represent minimal credence and 1 to represent maximal credence. We noted that this was a mere matter of convention. We might thus be minded to ask now, when we have given our final argument for Probabilism: What principle would an accuracy dominance argument justify if we had chosen our convention differently? Put differently: Is our justification for Probabilism robust under changes in our choice of convention?

Colin Howson worries that it is not:[1]

> Details of [Joyce’s] argument have been questioned, but a more fundamental objection is to its robustness: it is not clear that it is inaccuracy with respect to truth that Joyce’s measure represents, depending as it seems to do on the (purely conventional) use of 1

> as the numerical proxy for 'true' rather than 0. Indeed, by changing these values round one gets a very different result. A perfectly accurate [credence function c] with respect to [v^*_w, where $v^*_w(X) = 0$ if X is true at w and $v^*_w(X) = 1$ if X is false at w] is now only *dually probabilistic*, with c assigning the value 0 to a tautology, etc., and Joyce's proof would show that for any probabilistic belief function there is a non-probabilistic one strictly less inaccurate than it with respect to all [v^*_w]. (Howson, 2008, 20)

Note that Howson talks of the choice of 0 and 1 as conventional choices of 'numerical proxies' for 'true' and 'false'. It's debatable whether that's really the best way to understand the version of the accuracy argument for Probabilism presented by Joyce (1998). But it is certainly not how it is best to understand the version of the argument given here. Rather 0 and 1 are conventional choices of our representation of *minimal and maximal credence*, respectively. They are not proxies for *truth values*. Their connection to truth values comes via the substantial claim that the ideal credence in a truth is the maximal one—and thus, by convention, 1—and the ideal or vindicated credence in a falsehood is the minimal one—and thus, by convention, 0. This is Alethic Vindication.

(p.78) Nonetheless, let's see how our argument would be affected if we were to represent maximal credence by b and minimal credence by a, where a and b are real numbers. Then Alethic Vindication would become:

> **Alethic Vindication**$_{a,b}$ The ideal credence function at world w is $v^{a,b}_w$, where $v^{a,b}_w(X) = a$ if X is false at w and $v^{a,b}_w(X) = b$ if X is true at w.

(Note that Alethic Vindication is the special case of this principle where $a = 0$ and $b = 1$. That is, Alethic Vindication is Alethic Vindication$_{0,1}$.) Now Brier Alethic Accuracy says that the inaccuracy of a credence function at a world is the Brier score of c at w, which is the squared Euclidean distance of c from v_w. In the presence of Alethic Vindication$_{a,b,}$, Brier Alethic Accuracy becomes Brier Alethic Accuracy$_{a,b,}$ which says that the inaccuracy of a credence function at a world is the squared Euclidean distance of c from $v^{a,b}_w$. With this in place, it turns out that the credence functions that are not accuracy dominated by a credence function that is immodest—and thus are not ruled irrational by Immodest Dominance—are the probability$_{a,b}$ functions, which are defined as follows:

Definition 6.0.1 (**Probability$_{a,b}$ function**) *Suppose $\mathscr{F}$ is a finite set of propositions. Then $c : \mathscr{F} \to [a, b]$* is a probability function$_{a,b}$ on $\mathscr{F}$ *if*

(i) *$\mathscr{F}$ is an algebra and*
(a) *c is normalized$_{a,b}$. That is, $c(\bot) = a$ and $c(\top) = b$*
(b) *c is additive. That is, $c(A \vee B) = c(A) + c(B) - c(A \& B)$.* or

(ii) *$\mathscr{F}$ is not an algebra and c can be extended to a probability$_{a,b}$ function on the smallest algebra $\mathscr{F}^*$* that contains $\mathscr{F}$.

Thus, the probability$_{0,1}$ functions are just the familiar probability functions. Thus, our accuracy dominance argument establishes Probabilism$_{a,b}$:

Probabilism$_{a,b}$ If an agent has a credence function over $\mathscr{F}$, then it is a requirement of rationality that c is a probability$_{a,b}$ function on $\mathscr{F}$.

Thus, if we choose a and b so that $a \neq 0$ or $b \neq 1$, then our accuracy dominance argument does not establish Probabilism. So, in a very strict sense, Howson is correct—the accuracy dominance argument for Probabilism is not robust under a change in the conventional choice of our representation of minimal and maximal credence. However, in a much more important sense, it is.

What does Probabilism really say, stripped of its conventional aspects? It says firstly that a rational agent will have minimal credence in contradictions and maximal credence in tautologies; and secondly it says that a rational agent's credences will be additive, in the sense that her credence in a disjunction will be the difference between the sum of her credences in the disjuncts, on the one hand, and her credence in their conjunction, on the other. If we represent minimal credence as 0 and maximal (p.79) credence as 1, then this amounts to Probabilism. But if we make different choices, it amounts to the relevant version of Probabilism$_{a,b}$. What's more, that's exactly as it should be! We would not want a justification of Probabilism that claims to establish Probabilism even if we do not represent minimal credence by 0 and maximal credence by 1. For in that situation, it would not demand that contradictions get minimal credence and tautologies get maximal credence. In short: the substantial component of Probabilism—the part that is not conventional—is precisely what is justified by the accuracy argument. Thus, in this important sense, the argument is robust.

Notes:

([1]) Howson considers this objection again in (Howson, 2015). Branden Fitelson has also raised similar worries in a more sophisticated way (Fitelson, 2012). I consider only Howson's objection here because, while it is directed at the view of credences as estimates of truth values —a view that Joyce (1998) proposes and I reject—it can be repurposed as an objection against the approach taken in this book. Fitelson's objection is also directed against the truth-value estimates conception of credences. But it is harder to see how to repurpose it as an objection to my approach.