A PROBABILISTIC EPISTEMOLOGY OF PERCEPTUAL BELIEF

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Probabilistic approaches to epistemology are promising in many ways. Among other things, they can give promising accounts of inference, including both deductive and non-deductive forms of inference. One advantage of these probabilistic approaches, as we shall see, is that they can also give an account of how rational inferences can be defeasible—including an account of the distinction between so-called rebutting and undercutting defeaters. But how can these probabilistic approaches be married with a plausible account of the epistemology of perceptual belief? This is the problem that I shall discuss here.

As I shall explain, there are three well-known models of how to account for perceptual belief within a probabilistic framework: (a) a Cartesian model; (b) a model advocated by Timothy Williamson (2000); and (c) a model advocated by Richard Jeffrey (2004). In Section 1, after first explaining the kind of probabilism that I am assuming here, I shall explain these three models of the epistemology of perceptual belief.

In Section 2, I shall raise a problem that each of these models faces—the problem of accounting for the defeasibility of perceptual justification and perceptual knowledge. As we shall see, the Williamson-inspired theorists have to deny that defeasibility can be explained within the probabilistic framework at all; indeed, recently, some of these theorists have gone so far as to deny that knowledge is ever defeasible. If we are inclined to take both defeasibility and probabilism more seriously, we should search for a way of explaining defeasibility within the probabilistic framework. In Section 3, I shall focus on the version of this problem that Jonathan Weisberg (2009 and 2015) has raised against Jeffrey’s model; in this section, I shall present a solution to this problem and defend the solution against Weisberg’s objections. In Section 4, however, I shall argue that this solution is open to some further objections, and that the best way of responding to these objections effectively vindicate the Cartesian model after all. In the fifth section, I shall argue that the Cartesian model is not vulnerable to a number of criticisms that have been raised against it. My tentative conclusion is that the Cartesian model is the best version of a probabilistic epistemology of perceptual belief.

1. Probabilism and sensory experience

According to the probabilistic approach to epistemology, for every time in your mental life, there is a certain probability function that rationally should be guiding you at that time. (In more sophisticated versions of these probabilistic approaches, there need not be a unique probability function that rationally should be guiding you at this time, but only a big set of such functions. To keep things simple, however, I shall for the most part suppress this qualification in what follows.)

Part of what it means to say that this probability function “rationally should be guiding you at this time” is that it implies the following point: To the extent that you are rational, for every
proposition \( p \) that you have attitudes towards, your credence in \( p \) should match \( p \)'s probability according to this probability function that rationally should be guiding you at the time.\(^2\)

On this interpretation of probabilism, we are not assuming that you have attitudes towards every proposition for which this probability function is defined. Your belief-system—or in other words, your set of credences or doxastic attitudes—may be gappy: it may not involve any attitude at all towards many of these propositions.

Moreover, we are also not assuming that you actually are perfectly rational, or that your actual beliefs correspond in any sense to this probability function that rationally should be guiding you. Your actual beliefs and credences may be incoherent, or defective in many other ways. Nonetheless, something about your cognitive situation—such as the evidence that you possess, perhaps along with other facts about what is going on in your mind at or immediately before the time in question—somehow determines this probability function as the one that rationally should be guiding you. Thus, if a proposition \( p \) is assigned a certain probability by this probability function, it follows that you have propositional justification for having the corresponding credence in \( p \); but it does not follow that you actually have the corresponding credence—let alone that you have this credence in a doxastically justified manner.\(^3\)

One picturesque way to conceive of this probability function is by imagining an angel, perched inside your head.\(^4\) This angel has unlimited powers of calculation, and knows all \textit{a priori} truths, but otherwise is in many ways quite ignorant about the world. However, she knows exactly what your evidence is, and what is going on in your mind, both now and in the immediate past, and this is what guides her in giving you advice about what the world is like. This advice that she gives you takes the form of a probability function—the probability function that rationally should be guiding you. To the extent that you are rational, you hear and follow the angel’s advice, by proportioning your belief in each proposition \( p \) that you have any attitudes towards to the probability that \( p \) has according to this advice. But you may sometimes fail to hear the angel’s advice perfectly, and as a result your beliefs may sometimes fail to match this probability function in all respects.

According to this probabilistic approach, the probability function that rationally should be guiding you at the relevant time also determines a conditional probability function. For every pair of propositions \(<p, q>\) over which this probability function \( P(*) \) is defined, this probability function also determines a conditional probability for \( q \) given \( p \), \( P(q|p) \). Whenever \( P(p) \neq 0 \), let us assume that \( P(q|p) = P(p \& q) / P(p) \).

To the extent that you are rational, this conditional probability function will guide you in drawing and accepting \textit{inferences}. Every inference, I shall assume, has a (possibly empty) set of propositions as its \textit{premises}, and a single proposition as its \textit{conclusion}. The rational attitude to have towards the inference is determined by the conditional probability of the inference’s conclusion, conditional on the conjunction of its premises. (If the inference has no premises, then the conditional probability of its conclusion conditional on its premises is just its unconditional probability.) Specifically, the rational attitude to have towards an inference is a \textit{suppositional} attitude—that is, a conditional attitude towards the conclusion, conditional on the assumption of the premises. To the extent that you are rational, for every inference \(<S, p>\) that you have attitudes towards, you should proportion your conditional confidence in \( p \), conditional on the assumption of the members of \( S \), to the conditional probability of \( p \).
given the conjunction of the members of $S$, according to this probability function that rationally should be guiding you.

This probabilistic framework can give a simple account of the defeasibility of inferences. Even if, in the light of your old evidence, the inference’s conclusion had high conditional probability given the inference’s premises, you might acquire new evidence which significantly lowers the conditional probability of the conclusion given the premises. In that case, this new evidence counts as a defeater for that inference.

This approach also allows for a version of the distinction between rebutting and undercutting defeaters—a distinction that was first introduced by John Pollock (see Pollock and Cruz 1999, 37). The intuitive idea of this distinction is this: a rebutting defeater tells against the reliability of the inference’s premises as a guide to the truth of the conclusion, and also directly tells against the truth of the conclusion; an undercutting or undermining defeater tells against the reliability of the premises as a guide to the truth of the conclusion, but without telling directly against the conclusion.

To draw this distinction in probabilistic terms, it is helpful to assume that the relevant probability function—the probability that rationally should be guiding you—does not make the conjunction of the inference’s premises certain (that is, it assigns a non-zero probability to the negation of the conjunction of these premises). We can now compare this probability function with the result of updating this probability upon learning the truth of the defeater. A rebutting defeater lowers both the conditional probability of the conclusion, conditional on the conjunction of the inference’s premises, and also the unconditional probability of the conclusion. An undercutting defeater lowers the conditional probability of the conclusion conditional on the conjunction of the premises, but does not significantly lower the conclusion’s unconditional probability.\(^5\)

This, then, is the version of the probabilistic approach that I shall consider here. But how should such a probabilistic approach make sense of the epistemology of perceptual belief?

When perceptual beliefs are rational, this is presumably because of their relationship to sensory experiences. These sensory experiences are mental events that are cognitively accessible—in the sense of being available to be responded to by the thinker’s central cognitive processing systems. It seems that if you are rational, you will revise and adjust your beliefs in response to your sensory experiences. So, within our probabilistic framework, these sensory experiences must somehow change the probability function that rationally should be guiding you. But how are we to explain exactly how your sensory experiences change this probability function?

There are three models that I shall consider here:

- a. A broadly Cartesian model—which involves conditionalizing on what I shall call “experiential truths” (such as “appearance propositions”);
- b. A model advocated by Timothy Williamson (2000)—which involves conditionalizing on what the thinker knows;
- c. A model advocated by Richard Jeffrey (2004)—which involves so-called “Jeffrey conditionalization”.

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- c. A model advocated by Richard Jeffrey (2004)—which involves so-called “Jeffrey conditionalization”.

In each of these models, there is something that your experience most directly and immediately teaches you—some question that the sensory experience most directly speaks to. Then the knock-on effects of your experience’s teaching you this for the rest of your belief-system is broadly inferential, guided by the appropriate prior conditional probabilities of the relevant propositions (conditional on the propositions that the experience most directly speaks to). Specifically, both the Cartesian model and Williamson’s model rely on the following simple kind of conditionalization. If a probability function \( P_1(\cdot) \) results from a prior probability function \( P_0(\cdot) \) by conditionalizing on some new information \( e \), then for every proposition \( q \) for which these probabilities are defined, \( P_1(q) = P_0(q|e) \).

According to the Cartesian model, sensory experiences change the probability function that should be guiding you in the following simple way. For every time in your mental life, there are certain true propositions, which can be built up out of the concepts that you possess, about the sensory experiences and other consciously accessible mental events and states that you are present in your mind at that time. Just to have a label, call these propositions the “experiential truths” for you at that time. According to this Cartesian model, at every time, these experiential truths are assigned probability 1 by the probability function that rationally should be guiding you at that time. Otherwise, the probability function that rationally should be guiding you at this time results from conditionalizing some appropriate prior probability function on these experiential truths (along with any other evidence that is acquired at that time).

This model of the epistemology of perception can be thought of as the “Me First” model. The question that your sensory experiences most directly and immediately speaks to is a question about you: what you most directly learn from experience is simply the experiential truth that you are now having that very experience. For example, suppose that you are now having a sensory experience as of sitting in front of a computer screen in a darkened room. Then what this experience most immediately teaches is the true proposition that you could express by saying something like “I am now having an experience as of sitting in front of a computer screen in a darkened room”. Everything else that your experience teaches you is taught derivatively from its connection to these experiential truths. In a sense, this model makes everything that experience tells you about the external world “inferentially justified” by what your experience teaches you about your own mind.

Williamson’s (2000) model takes a different approach. According to this model, the crucial point is that your sensory experiences often count as events of acquiring knowledge. The knowledge that you acquire through your sensory experiences is not normally restricted to knowledge of your own current mental states. Very often, you directly acquire knowledge of the external world. For example, your sensory experience as of sitting in front of a computer screen in a darkened room might count as your genuinely perceiving and thereby coming to know that you are indeed sitting in front of a computer screen in a darkened room.

According to Williamson (2000), at every time in your mental life, the “evidence” that you possess at that time consists of all and only the propositions that you know at that time. It follows that this evidence will include everything that you know directly as a result of the sensory experiences that you have at that time. Moreover, Williamson argues that, at every time, the probability that rationally should be guiding you at that time is the result of conditionalizing some appropriate prior probability on the evidence that you possess at that
time. In this way, the probability function that rationally should be guiding you must assign probability 1 to every proposition that you know—including all the propositions that you know through your sensory experiences. For example, if you know that you are now sitting in front of a computer screen, this probability function assigns probability 1 to the proposition that you are sitting in front of a computer screen.

According to the third model that I shall consider here, Jeffrey’s (2004) model, your sensory experiences can change the probability function that rationally should be guiding you without directly shifting the probability of any proposition all the way to 1. For every sensory experience that you have, there is a certain question that this experience most immediately speaks to. This question is in effect a \textit{partition} of propositions—that is, a jointly exhaustive and mutually exclusive set of propositions. (For example, perhaps your current sensory experiences most immediately speak to the pair of propositions that you could express by uttering the sentences ‘I am now sitting in front of a computer screen’ and ‘I am not now sitting in front of a computer screen’.) In this case, your experience might raise the probability of one proposition in this partition, but without raising it all the way to 1, and so still leaving some non-zero probability in the other propositions in the partition.

Once the probability of these propositions in the partition that your experience most directly speaks to is changed in this way, the issue arises of what effect this has on the probability of all the \textit{other} propositions for which the probability function is defined. Just like the Cartesian model and Williamson’s model, Jeffrey’s model implies that the new probability of every proposition $q$ is determined by some appropriate prior conditional probabilities—specifically, by the prior conditional probabilities of $q$ conditional on each proposition in this partition. More precisely, for every proposition $q$, the new probability that should be guiding you assigns $q$ a \textit{weighted sum} of the prior conditional probabilities of $q$ conditional on each proposition $p_i$ in this partition, weighting each of these prior conditional probabilities by the new experience-imposed probability of that proposition $p_i$.

One vexing problem for Jeffrey’s model is that it gives no account of exactly \textit{how} the experience changes the probability of the propositions in this partition. It seems clear that the precise change that your experience makes to the probability of propositions about the external world does not depend only on the character of the experience alone; it also depends on your background beliefs and credences as well. So, it seems that Jeffrey’s model crucially needs to be supplemented by something that the proponents of the model have so far failed to provide—namely, some account of how exactly the experience changes the probability of the various propositions in the relevant partition. We shall return to this problem in what follows.

It is a striking fact that many if not all of the propositions that we directly learn from sensory experience seem to involve the so-called “essential indexical”. That is, they are propositions that we would have to express using indexical words like ‘I’ and ‘now’. For example, the proposition that you can now express by saying ‘I am now travelling in a train’ is one that you arguably cannot entertain at any other time—since the time that you now think of as ‘now’, under this distinctive present-tensed mode of presentation, cannot be thought of in that way at any other time. In short, the proposition can be entertained only at this one time, and not at any other time.

Within the probabilistic framework, this means that the relevant “prior” conditional probability that determines the probability that rationally should now be guiding you cannot
exactly be the probability that rationally should have been guiding you at the earlier time—since that old probability was defined over propositions that are no longer even available to be thought or entertained at the later time. The “prior” probability must be something instead.

It is a fascinating and crucial question what exactly this appropriate prior probability function must be. To fix ideas, let us assume that it is some adjustment of the probability that rationally should have been guiding you at the earlier time, to reflect the fact that the propositions that are now available for you to entertain and think about are different from those that were available at that earlier time. Exactly what sort of “adjustment” this would have to be is a question that I shall not be able to explore here. However, bearing in mind that the appropriate “prior” probability function may not be exactly the same as the probability function that rationally should have been guiding you at the earlier time will help us to answer some of the objections that can be raised against these probabilistic models of perceptual belief.

There are of course many different views of the nature of sensory experiences (including sense-datum views and disjunctivist views, among many others). I hope that the arguments that I shall give here will be neutral between these different views. However, to keep things simple, I shall formulate all these arguments as though a broadly conceptually-representational view of experiences is correct. That is, I shall assume that every experience has a content, which is built up out of concepts that the thinker possesses. Typically, it seems that this content concerns the external world. For example, the content of your experience might entail the proposition that you could express by saying ‘I am now sitting in front of a computer screen in a darkened room’. In general, if the content of a sensory experience is the proposition p, I shall say that this is an experience as of p’s being the case. But the main question that I shall explore here is not about the nature of this experience, but about its epistemological significance for our beliefs.

2. The defeasibility problem

It seems plausible that all—or at least almost all—of the beliefs that we acquire from experience are defeasible: the justification of these beliefs can be defeated. For a belief’s justification to be defeated is for new evidence to arise which makes it cease to be rational to hold the belief: with your old evidence, it was rational to hold the belief, but with the new evidence it is no longer rational for you to hold the belief. Moreover, it seems that these beliefs are vulnerable, not just to rebutting defeaters, but also to undercutting defeaters. Intuitively, we have an undercutting defeater for a belief that is based on an experience when our evidence does not directly tell against the proposition that is the content of that belief, but instead tells against the reliability of the experience as a way of coming to learn that proposition.

Unfortunately, however, none of these three models easily allows for all these forms of defeasibility. On the Cartesian model, at every time, the experiential truths about the conscious mental states that you are having at that time always have probability 1. In assigning a proposition probability 1, the probability function is in effect treating the proposition in question as utterly certain—and to that extent, indefeasible. So, the Cartesian model seems to conflict quite sharply with the idea that all the beliefs that you could acquire through experience—even beliefs in these experiential truths—are defeasible.
Williamson’s model has an even more extreme version of this problem, since it assigns probability 1, not just to these experiential truths, but to all propositions that you know. So, on this model, the probability function that rationally should be guiding you effectively treats all the propositions that you know as utterly certain and indefeasible.

Admittedly, it is compatible with Williamson’s view as I have formulated it so far that if you have defeating evidence—such as evidence that your experiences are unreliable—your experiences will not enable you to know the truths that they would have enabled you to know in the absence of such evidence. But Williamson cannot appeal to the probabilistic framework to explain why perceptual knowledge is defeasible in this way. Williamson’s version of the probabilistic framework simply presupposes that you know certain propositions, and do not know certain other propositions. Whether or not you know these propositions has to be explained quite independently of any appeal to probability. So, on Williamson’s model, the defeasibility of perceptual knowledge would have to be explained quite separately from the probabilistic framework, by invoking some special principles concerning knowledge.

Unfortunately, however, nothing in Williamson’s work on knowledge provides any explanation of this sort of defeasibility. For example, Williamson (2000, Chap. 5) argues that if you are to know a proposition \( p \), your belief in \( p \) must be “safe” from error. But it seems clear that defeating evidence can sometimes be misleading evidence. For example, you can have evidence that you are not perceiving normally even if, in fact, you are perceiving perfectly normally. So, the fact that you have this kind of “defeating evidence” does not in itself imply that it is in any way unsafe for you to base a belief in \( p \) on your experience as of \( p \)’s being the case. The belief could still be just as safe as other beliefs that are paradigmatic instances of knowledge.

So, some other condition on knowledge besides safety would have to be invoked to account for this sort of defeasibility. But it is quite unclear what this other condition would be. It is not surprising, then, that Williamson and other epistemologists who have been influenced by him have recently suggested that perhaps knowledge is not in fact defeasible at all. In this way, this Williamsonian model has led epistemologists to a position that is even more radical than the Cartesian view: on this radical position, it is not just beliefs in experiential truths that are indefeasible, but all perceptual knowledge is indefeasible.

In this discussion, my aim is to explore how to account for the epistemology of perceptual belief within the probabilistic framework. In the way that I have just described, Williamson’s position provides no account of the epistemology of perceptual belief within any probabilistic framework. For this reason, I shall no longer focus on Williamson’s view; from now on we shall focus on alternatives to Williamson’s view—such as the Cartesian model and Jeffrey’s model instead.

As I shall now explain, it seems that Jeffrey’s model also has difficulties accounting for all the kinds of defeasibility that intuitively seem to exist. This point has been argued particularly clearly by Jonathan Weisberg (2009). Specifically, Weisberg argues that, while Jeffrey’s model may be compatible with rebutting defeaters, it cannot accommodate undercutting or undermining defeaters.
The crucial point is that whenever a probability function is updated by conditionalization, the transition from the prior probability to the new probability is *rigid* in the sense that certain conditional probabilities must remain constant throughout the updating process.

i. Suppose that the prior probability function \( P_0(\cdot) \) is updated by classical Bayesian conditionalization on the new evidence \( e \). Then the new updated probability function \( P_1(\cdot) = P_0(\cdot|e) \). This transition from \( P_0(\cdot) \) to \( P_1(\cdot) \) is rigid with respect to \( e \) because for every proposition \( q \), \( P_0(q|e) = P_1(q|e) \).

ii. Suppose that your experience shifts probability around a partition of propositions \( \{e_i\} \). Specifically, suppose that your experience changes the probability of each member \( e_i \) of this partition from \( P_0(e_i) \) to \( P_1(e_i) \). Then, if the prior probability \( P_0(\cdot) \) is updated by *Jeffrey conditionalization*, the new probability function \( P_1(\cdot) = \sum_i P_0(\cdot|e_i) P_1(e_i) \). This transition from \( P_0(\cdot) \) to \( P_1(\cdot) \) is rigid with respect to \( \{e_i\} \) because for every proposition \( q \), \( P_0(q|e_i) = P_1(q|e_i) \) for each \( e_i \).

Here is a quick sketch of Weisberg’s argument that conditionalization leaves no room for undercutting defeaters. Suppose that your experience raises the probability of some proposition. For example, you examine a piece of silk cloth in dim light, and your experience raises the probability of the proposition \( g \), ‘The silk cloth is green’, and lowers the probability of \( \neg g \), ‘The silk cloth is not green’.

Now consider an undercutting defeater \( d \), such as ‘The lights are green-tinted’. If \( d \) is an undercutting defeater (as opposed to a “rebutting” defeater), then in advance of your having the experience, \( d \) tells you nothing at all about the colour of the silk cloth. So, it seems, according to the appropriate prior probability function \( P_0(\cdot) \) that is not yet affected by your having this experience, \( P_0(g|d) = P_0(g) \).

However, after the probability of \( g \) has risen in response to the experience, \( d \) does become relevant to the probability of \( g \). So, it seems that according to the probability function \( P_1 \) that rationally should be guiding you at the *later* time when you have this experience, \( P_1(g|d) \) must be less than \( P_1(g) \). As Weisberg shows, however, this cannot possibly happen if the transition from \( P_0(\cdot) \) to \( P_1(\cdot) \) is rigid with respect to the partition \( \{g, \neg g\} \).

In this way, each of these three probabilistic models of the epistemology of perception seems to have a serious problem with giving an adequate account of the defeasibility of perceptual justification.

3. A solution to Weisberg’s problem for Jeffrey’s model

In this section, I shall present a solution to the problem that Weisberg raises for Jeffrey’s model, and I shall defend this solution against Weisberg’s objections. The basic point here is simple: proponents of Jeffrey’s model can deny that the updating of this probability resulting from your experience is rigid with respect to a simple pair of propositions like \( \{g, \neg g\} \). The immediate effect of your experience is not just to raise the probability of \( g \) and lower the probability of \( \neg g \). Instead the immediate effect of your experience must be more complex. ¹¹

Let \( d' \) be what I shall call “the *generic* defeater”. Later, we shall investigate in more detail exactly what this generic defeater is, but for the time being, let us take it to be a proposition like ‘My colour experience is not a reliable guide to whether or not the silk cloth is green’.
Then the relevant partition for the impact of your experience is: \{g \& d', \neg g \& d', g \& \neg d', \neg g \& \neg d'\}.

\[\neg d' \text{ (The generic defeater is false)} \quad \text{and} \quad d' \text{ (The generic defeater is true)}\]

<table>
<thead>
<tr>
<th>g (“The silk cloth is green”)</th>
<th>(P_0(g &amp; \neg d') = 0.3)</th>
<th>(P_1(g &amp; \neg d') = 0.8)</th>
<th>(P_0(g &amp; d') = 0.033\ldots)</th>
<th>(P_1(g &amp; d') = 0.033\ldots)</th>
</tr>
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<tbody>
<tr>
<td>(\neg g \text{ (“The silk cloth is not green”)})</td>
<td>(P_0(\neg g &amp; \neg d') = 0.6)</td>
<td>(P_1(\neg g &amp; \neg d') = 0.1)</td>
<td>(P_0(\neg g &amp; d') = 0.066\ldots)</td>
<td>(P_1(\neg g &amp; d') = 0.066\ldots)</td>
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So long as the appropriate prior probability of \(d'\) is sufficiently low, the main immediate effect of the experience will be greatly to increase the probability of \(g \& \neg d'\) (the top left cell in this figure, shaded green). However, the experience will increase the probability of \(g \& \neg d'\) almost entirely at the expense of the probability of \(\neg g \& \neg d'\) (the bottom left cell in the figure, shaded grey); the experience will barely change the probability of \(g \& d'\) and of \(\neg g \& d'\) (the two cells on the right-hand side of this figure, shaded yellow)—or at all events, if your experience does lower the probability of either of those propositions, it will do so in a way that leaves the ratio between the probability of \(g \& d'\) and the probability of \(\neg g \& d'\) unchanged.

So, your experience has changed the relevant conditional probabilities: \(P_1(g|d')\) is lower than \(P_1(g)\), even though according to the appropriate prior probability function \(P_0(\cdot)\) that is not yet affected by your having the relevant experience, \(P_0(g|d')\) is not lower than \(P_0(g)\). Thus, we can now say that any proposition \(h\) that raises the probability of the generic defeater \(d'\), but did not count against \(g\) according to the appropriate prior probability function \(P_0(\cdot)\), counts as an undercutting defeater for \(g\). In other words, if \(P_0(g|h)\) is not lower than \(P_0(g)\), but \(P_1(d'|h)\) is higher than \(P_1(d')\), then \(h\) is an undercutting defeater for \(g\).

Evidently, this solution involves making room for the possibility of defeaters in the original partition that the experience immediately bears on. A certain kind of radical holist would doubt that we can do this: according to this radical holist, there is a completely open-ended range of defeaters, and no simple “generic defeater” that can be expressed by any single proposition. For example, the radical holist might insist that even if you do not acquire any evidence that your colour experience is unreliable, there could be other undercutting defeaters as well. Perhaps you could get extraordinary evidence that you are not having the experience at all. Or perhaps you acquire weird evidence that you don’t even possess the concept green, or that you are irrational to the point of total insanity. Or perhaps …

However, I am not convinced that we should be moved by these suggestions from the radical holist. It seems more plausible that there is a definite range of defeating propositions, which could at least in principle have been identified in advance of your having the particular experience. So, it seems perfectly possible to me that the original partition that the experience immediately bears on has already made room for the possibility of defeaters, in the way that I have sketched.
In more recent work, Weisberg (2015, 145–6) has issued a challenge to this solution to his problem: What proposition, exactly, can play the role of the “generic defeater”?

Whatever exactly this defeater is, it must meet a number of constraints. As Weisberg emphasizes, prior to the experience, the defeater \(d'\) must be probabilistically independent of the proposition in question: that is, \(P_0(g|d') = P_0(g)\). Since the prior probability of \(g\) was low but not zero, \(d'\) cannot entail either \(g\) or its negation \(\neg g\). Since the posterior conditional probability \(P_1(g|d')\) is also low but non-zero, it seems plausible that not even the conjunction of \(d'\) and a true description of the experience can entail either \(g\) or its negation \(\neg g\).

In general, \(d'\) needs to be neither too strong nor too weak. If it is too strong, then it will fail to capture all the intuitively plausible cases of defeasibility; if it is too weak, it will overpredict cases of defeasibility, implying that there is defeat in cases where there is in fact no defeat.

Thus, as Weisberg points out, the generic defeater cannot be a proposition like ‘My vision is generally unreliable’. Even if my vision is unreliable, I might have evidence that although my vision is generally unreliable, it is not unreliable in cases like the one that I am currently in; so this interpretation would make \(d'\) too weak. But this interpretation would also make \(d'\) too strong, because even if my vision is not generally unreliable, there could be something special about this particular case, which defeats the justification that the experience gives to the proposition \(g\) in this case.

Thus, the generic defeater \(d'\) must have something quite specifically to do with the particular proposition that is in question: in our example, it must have something specifically to do with \(g\), the proposition that the silk cloth is green; and it must also have something quite specifically to do with the experience that would normally justify that proposition. So what proposition could this generic defeater \(d'\) be?

The distinction between rebutting and undermining defeaters was developed in most detail by John Pollock. According Pollock and Cruz (1999, 201f.), it is true, in general, that your having a sensory experience that has \(p\) as part of its content is a defeasible reason for you to believe \(p\). But, they propose, this reason is defeated by suitable propositions of the form ‘\(r,\) and the probability is low that \(p\) is true given that \(r\) is true and I have an experience as of its being the case that \(p'\).’

According to Pollock and Cruz, then, defeaters for perceptual justification have a general form—the general form of a certain kind of proposition about probability. Now, Pollock has a distinctive and somewhat unusual interpretation of such propositions about probability. But the important point is that these are propositions that in a sense should guide belief—roughly in the sense that it is at least normally rational to have a high conditional credence in \(p\) given the assumption of an appropriate proposition of the from ‘The probability of \(p\) is high’.

Within probabilistic frameworks, several kinds of propositions about probability have been thought to be ones that should guide belief in this way. For example, according to the “Principal Principle” of David Lewis (1980), we rationally should be guided by propositions about the objective chances of propositions, at least in the absence of any additional (“inadmissible”) information about those propositions. According to the “Reflection Principle” of Bas van Fraassen (1984), we rationally should be guided by propositions about the credences of our better-informed future selves. For our purposes, it does not matter exactly how we interpret these propositions about probabilities, so long as they are propositions that should guide belief in this way. But to fix ideas, I shall follow the example of Lewis’s Principal Principle, and I shall assume that the generic defeater is a proposition about objective chances.
Roughly, then, I propose that the generic defeater—for the justification that an experience as of \( p \)’s being the case would otherwise give for raising one’s credence in \( p \)—is the proposition that one could express by uttering: ‘The conditional objective chance of \( p \) given that I am having a sensory experience as of \( p \)’s being the case is low’. It is clear how this proposition meets the constraints that I highlighted above: it specifically concerns the proposition whose justification is in question, and the experience that in the absence of defeaters would provide that justification; and it is probabilistically independent of \( p \), consistent with both \( p \) and its negation.

If this is the content of the generic defeater, then it is tempting to explain its significance for the justification of perceptual belief in a way that parallels the Principal Principle. If we do this, then we can also answer two further questions that arise at this point. The first question is: how low is “low”? We can answer this question in a way that also solves the problem for Jeffrey conditionalization that I mentioned towards the end of Section 1—namely, the problem of explaining exactly how the experience shifts probability around the relevant partition of propositions. Specifically, we can say that a “low” conditional chance of \( p \) must be a chance that is equal to the prior unconditional probability of \( p \), \( P_0(p) \). For example, in the case that I presented earlier (where \( g \) = the proposition that the silk cloth is green), \( P_0(g) = P_1(g|d') = 0.333… \). So, in this case, we could say that \( d' \), the generic defeater, is:

‘The conditional objective chance of \( g \) given the experiential proposition \( e \) that I am having an experience as of \( p \)’s being the case = 0.333…’.

Suppose that the effect of your experience on the probability that rationally should be guiding you must parallel the Principal Principle in this way. Then, whenever the only information that you have about a proposition \( p \) is your experience itself, along with such information about \( p \)’s objective chances, it seems that the relevant probability functions \( P_0(*) \) and \( P_1(*) \) must respect this information about the chances. This would explain why \( P_0(p|d') = P_1(p|d') = P_0(p) \).

In such cases, if \( d' \) has probability 1 according to the probability function that rationally should be guiding you (and you have no other information about \( p \) other than the experience and such information about \( p \)’s objective chances), then the experience will not change the probability of \( p \) at all. In this case, the perceptual justification that the experience would normally give for having a high credence in \( p \) you is totally defeated. On the other hand, if the probability of \( d' \) is raised, but not all the way to 1, then this perceptual justification is partially defeated; and the greater the extent to which the probability of \( d' \) is raised, the greater the extent to which this justification is defeated.

The second question that arises here is: How should we understand the notion of “objective chance” as it appears in this account? I shall suppose here that each chance function of the sort that we are interested in is relativized to a certain point in time. The history of the world up to that point in time is held fixed; and chances are assigned to various different ways in which the world could evolve beyond that point. For our purposes, the relevant point comes immediately before the time of the event that makes it the case that \( p \) is true (if it is true) or makes it the case that \( p \) is false (if it is false). Assuming that we cannot perceive future events, this time will always come before the time of the experience itself.

What exactly determines what the relevant chances are? I propose that we should follow Luke Glynn (2010) in thinking that there are different chances at different levels of the world’s causal structure. So, even if the universe is deterministic at the microphysical level, this only implies that the chances at the microphysical level are all the trivial chances of 0 or 1; there could still be non-trivial chances at other levels of causal structure. For the purposes
of this account of defeasibility, the relevant level of causal structure is the psychological level—or more specifically, the level that is invoked by explanations of why thinkers perceive the world correctly or incorrectly.

As I have noted, this appeal to the epistemological role of propositions about objective chance parallels the “Principal Principle”. Jonathan Weisberg (2015, 146) picks up on this point when he criticizes attempts to give an account of the generic defeater in terms of objective chance. Weisberg has two main objections to these accounts.

His first objection is that you might have “inadmissible” information—information that “trumps” or “overrides” the information about the objective chances. If you could have inadmissible information of this sort, then this approach would in effect overpredict defeaters: it would entail that your justification is defeated by your having justification for accepting this “generic defeater”, even though the generic defeater is in fact in this way trumped or overridden by this inadmissible information.

However, once we think more carefully about what “inadmissible information” is, we see that this is not a real threat in this case. At least so long as nothing strange such as time travel or the like is going on, inadmissible information consists in information about the future—or more accurately, information about times after the point in time to which the relevant chance function is relativized. As I have said, the point in time to which the relevant chance function is relativized must be a point shortly before the time of the event that makes the proposition have the truth value that it has. But the only time at which this perceptual justification could be defeated is the time of the experience itself. In the absence of time travel or the like, it is hard to see how any inadmissible information about the event that gives this proposition its truth-value can reach the thinker faster than the experience itself. (In the case of vision, that would involve something like information travelling faster than the speed of light!) So there seems to be no serious risk of the thinker’s having “inadmissible information” in these cases.

Jonathan Weisberg’s second objection—which is the objection on which he lays most weight—is that not everyone believes in objective chances at all. But here it matters that we are interpreting probabilism, not as a theory about your actual credences, but as a theory about the probability that rationally should be guiding you. Even if you do not actually believe in objective chances, the probability that rationally should be guiding you could still assign non-trivial probabilities to various hypotheses about such chances. That is, you can still have propositional justification for credences about objective chances. So, it is not clear to me that the possibility of doubts about the existence of objective chances grounds any significant objection to this interpretation of the generic defeater.

4. Back to the Cartesian model

Unfortunately, however, a further objection can be raised against this solution to Weisberg’s problem. Suppose that you have an experience that in the absence of defeat would justify believing a proposition $p$. Then, according to what I suggested above, the generic defeater $d'$ for this experience, in relation to $p$, is the proposition that the conditional objective chance of $p$, conditional on the experiential proposition $e$ that you are having this experience, is equal to the prior unconditional probability of $p$. (For example, in the case that I gave in Section 3, where $g$ is the proposition that the silk cloth is green, $P_1(g|d') = P_0(g) = 1/3$; so, in this case, the generic defeater $d'$ is the proposition that the conditional chance of $g$ given $e$ is $1/3$.) This is what explains why, given the assumption that $d'$ is true, the experience fails to raise the
probability of \( p \) at all. So, given the assumption that \( d' \) is true, it is conditionally certain that the conditional chance of \( p \) given \( e \) has this particular low value.

On the other hand, if the probability of \( d' \) remains low, then there is no defeat, and the experience raises the probability of \( p \) in the normal way. So, the posterior conditional probability of \( p \) given \( \neg d' \) must be at least as high as the posterior unconditional probability of \( p \) when the experience raises \( p \)’s probability in the normal way. (For example, in the case of \( g \), the proposition that the silk cloth is green, \( P_1(g) = 0.8 \), and \( P_1(g | \neg d') = 8/9 \).) But this too demands explanation; and it seems that if we explain defeat in a way that parallels the Principal Principle, we should also explain the absence of defeat in a way that also parallels the Principal Principle. So, it seems that according to the probability function that rationally should be guiding you, it must be conditionally certain, given the assumption that the generic defeater \( d' \) is false, that the conditional chance of \( p \) given \( e \) is high—specifically, at least as high as this posterior unconditional probability of \( p \).

In general, then, it must be conditionally certain that if \( d' \) is false, the conditional objective chance of \( p \) given \( e \) is high, and also conditionally certain that if \( d' \) is true, the conditional objective chance of \( g \) given \( e \) is low. (For example, in the case of \( g \), the proposition that the silk cloth is green, it is certain that if \( d' \) is false, the conditional objective chance of \( g \) given \( e \) is 1/3, but if \( d' \) is true, the conditional objective chance of \( g \) given \( e \) is something like 8/9.) However, in most ordinary cases when we learn from experience, it seems extremely doubtful whether any such propositions could be conditionally certain, according to any probability function which in any sense rationally should be guiding us.

In general, normal thinkers like you and me never have high credences in very precise propositions about objective chances. What we have instead are estimates or expectations of objective chances. This fact is exploited by what is in fact the most useful corollary of the Principal Principle. According to this corollary, in the absence of any further (“inadmissible”) information about \( p \) and \( e \), your credence in \( p \) should match your expectation of the objective chance of \( p \), and your conditional credence in \( p \) given \( e \) should match your expectation of the conditional objective chance of \( p \) given \( e \).

We could try to stick a patch onto the proposals of the previous section to deal with this issue. But, whatever this patch is, so long as it aims to explain the significance of propositions about objective chances in a way that parallels the Principal Principle, it will imply that in the absence of defeat, the probability function that rationally should be guiding you at the time of the experience will determine a high expectation for the conditional objective chance of \( p \) (the proposition about the external world that in the absence of defeat is justified by the experience) given \( e \) (the experiential proposition that you are having this experience). Given the Principal Principle, it follows that this probability must also assign a high conditional probability to \( p \) given \( e \).

This conditional probability is something like an inference ticket. Specifically, we could think of it as an instance of the “rule of external world introduction”: From \( e \) (the experiential proposition that you can express by uttering “I have an experience as of \( p \)’s being the case”), infer—with high (but perhaps not maximum) confidence—\( p \) (the proposition that in the absence of defeat is justified by the experience).

So, it looks as if, in the absence of defeaters, the relevant instance of the “rule of external world introduction” counts as a rational inference according to the probability function \( P_1(\bullet) \) that rationally should be guiding you at the time of the experience. Moreover, presumably, in the absence of defeat, this will also have counted as a rational inference according to the appropriate prior probability \( P_0(\bullet) \). That is, even in advance of the experience, it was already
rational to assign a high conditional probability to \( p \) given \( e \). (As one might have said to oneself at that earlier time: “Suppose that, in a split second from now, I have an experience as of \( p \)’s being the case; then, most likely, \( p \) is true.”)

Taken together, however, these points are enough to vindicate the Cartesian model after all. The relevant instance of “external-world introduction” is encoded both by the appropriate prior probability function, and by the probability function that rationally should be guiding you at the time of the experience. So, the most economical account will just say that the question that the experience most directly speaks to is the question of whether \( e \) is true—and all other propositions that experience teaches us are justified inferentially, by means of these instances is this rule of inference. Moreover, since we have failed to identify any “generic defeater” for these experiential propositions like \( e \), it seems that we should simply say that the true experiential propositions are justified indefinitely. That is, these propositions just have probability 1, according to the probability function that rationally should be guiding you at the time of the experience itself.

In this way, our search for a probabilistic account of perceptual belief that accommodates defeasibility in a satisfying way has pushed us all the way back to the Cartesian model. The new probability \( P_1(\bullet) \) that rationally should be guiding you at the later time when you have the experience is simply the probability that results from the appropriate prior probability \( P_0(\bullet) \) by conditionalization on the experiential truth \( e \) that you are having this very experience.

Why should the appropriate prior probability function assign a high conditional probability to \( p \) given \( e \)? Perhaps it is because this prior probability determines a high expectation of the conditional objective chance of \( p \) given \( e \); then this high conditional probability of \( p \) given \( e \) could be explained by the Principal Principle. But in fact, we do not have to explain why the appropriate prior probability function assigns a high conditional probability to \( p \) given \( e \) in this way. As I shall explain in the next section, other explanations are possible. The important point right now is just that, for some reason or other, this prior probability function assigns a high conditional probability to \( p \) given \( e \).

In this way, the Cartesian model can explain exactly how the experience changes the probabilities of the propositions in question. First, whenever you have an experience as of \( p \)’s being the case, the probability function that rationally should be guiding you must assign probability 1 to the proposition that you are having an experience of this kind. Secondly, the appropriate prior probability assigns a high conditional probability to \( p \), conditional on your having an experience of this kind. This explains why the probability function that rationally should be guiding you at the time when you have the experience assigns a high probability to \( p \). This function assigns high probability to \( p \) because it results from conditionalizing this prior probability on the proposition that you are having this experience. According to this Cartesian model, then, these experiential truths all acquire probability 1. For this reason, there is no longer any need to appeal to Jeffrey conditionalization; classical Bayesian conditionalization is all that we need.

5. Is the Cartesian model acceptable?

This Cartesian model may seem to be open to a number of serious objections. First, as I explained in Section 2 above, it implies in a sense that these experiential truths are indefeasible. These truths have probability 1—the highest possible level of propositional
justification—and no evidence can possibly arise which strips these truths of this justification. This implication may seem incredible, for a number of reasons.

First, it seems to be an important fact that we hardly ever actually form beliefs about our own experiences at all. For the most part, our beliefs are focused on the external world. Normally, we just directly form beliefs about the external world, in an immediate response to our experiences, without ever forming beliefs about our own experiences at all.

However, the Cartesian model that I have described above is quite compatible with this point. I have articulated this model as a thesis about the probability function that rationally should be guiding you—not as a thesis about your actual beliefs or thought-processes themselves. When you have an experience as of p’s being the case, this function assigns probability 1 to the experiential truth that you have an experience of this kind. But it does not follow that you have to form any belief in—or indeed any attitude whatsoever towards—this truth. When you have the experience, the probability function that rationally should be guiding you will now assign a significantly higher probability to p, the proposition that forms part of the experience’s content. It now becomes rational for you to assign a high credence to p, corresponding to this significantly higher probability. But nothing in the Cartesian model implies that there is anything wrong with your assigning this high credence to p by taking a “short cut”, moving directly from the experience to an attitude towards p, without ever having any attitude toward the experiential truth that you are having this experience.

Secondly, it may seem implausible to claim that experiential truths have probability 1, because it may seem that if rational belief updating proceeds by conditionalization, every proposition that has probability 1 must retain probability 1 at all later times. Even if now, at time t₀, you have propositional justification for having credence 1 in the true experiential propositions about your current experiences, it seems clear that at later times, you may no longer have justification for being so completely certain of what your earlier experiences were at t₀.

However, what explains this, I believe, is that the present-tensed proposition that you could express at t₀ by uttering the indexical proposition ‘I am now having an experience as of p’s being the case’ is no longer available even to be entertained or considered at times later than t₀. At any later time t₁, the only way in which this fact can be represented in your thought is by a different proposition, such as the past-tensed proposition that you could express by saying ‘I was then having an experience as of p’s being the case’ (where ‘then’ expresses a “memory-demonstrative”—a mode of presentation of a time that is tied to an episodic memory of that time). This is why the probability function that rationally should be guiding you at the later time t₁ does not strictly speaking result by conditionalization from the probability function that rationally should have been guiding you at the earlier time t₀—but only, as I put it above, from an “appropriate prior” probability function, which is some kind of “adjustment” of the function that rationally should have been guiding you at t₀. So, we are not committed to saying that every experiential truth about the experiences that you are having at t retains probability 1 in all the probability functions that rationally should be guiding you at times later than t.

Thirdly, it also seems to be an important fact that we have no infallible method for forming beliefs in such experiential truths. As Timothy Williamson (2000, Chap. 4) has argued, no non-trivial truths—not even these experiential truths—are “luminous”. Cases can always arise in which although such an experiential proposition about your current experiences is true, you are not in a position to know this proposition.
Williamson formulated his anti-luminosity argument in terms of knowledge, but it seems that his argument can be generalized so that it applies to doxastic justification as well. While it is possible in principle for you to have credence 1 in all and only the true experiential propositions about your current mental states, if this were to occur it could only be by a lucky accident. Our capacities are not so infinitely finely discriminating that they could reliably result in our having credence 1 in every one of these experiential truths. In this way, we could never have a fully doxastically justified credence in every one of these experiential truths.

However, the Cartesian model does not entail that there is any infallible method that you can use that would result in your having any such ideally rational belief-system. The Cartesian model concerns only the probability that rationally should be guiding you—that is, in effect, the belief-system for which you have ideal propositional justification: it does not concern the doxastic justification of the belief-system that you actually have. In terms of the image that I introduced in Section 1, the Cartesian model requires that at every time the rational angel perched inside our heads is telling us the truth about the experiences that we are having at that time. But we do not always hear what the angel is telling us. Sometimes her voice grows too soft for us to hear accurately. Still, she always tells us the truth and nothing but the truth about the experiences that we are having at the time.

Still, the Cartesian model does not make it impossible for us, at least in many cases, to have doxastically justified credences in response to our experiences. In general, it seems plausible that to have a doxastically justified belief, one must have a belief as a result of manifesting rational dispositions, which in a more-or-less reliable non-accidental way tend to bring it about that one has beliefs that there is propositional justification for one to have. The structure of these dispositions does not have to be exactly parallel to the explanation of why there is propositional justification for one to have the belief in question. It is fine if these dispositions take short cuts along the way, so long as they result in our believing propositions that we have propositional justification for. So, even assuming this broadly Cartesian picture of the propositional justification of perceptual beliefs, we do not have to suppose that our doxastically justified perceptual beliefs are held as a result of any actual process of inference from the deliverances of introspection or the like.

This distinction between propositional and doxastic justification also allows us to respond to an objection that Jonathan Weisberg raises against the proposal that the evidence that one fundamentally acquires through having the experience is what he calls an “appearance proposition”—that is, in effect, a proposition to the effect that one is having an experience of that kind. As Weisberg (2015, 127) correctly says, if this proposal is combined with the view that the impact of this evidence on the rest of one’s belief-system is explained by conditionalization, “there must be no underminers for appearance propositions”. As he goes on to argue, this implication of the proposal seems to him to be implausible:

One could, of course, maintain that there are no underminers for appearance propositions. But this view is seriously in tension with the plausible thought that the transition from perceptual experience to belief is susceptible to error, and so the discovery that one is prone to such errors is generally available as a perceptual underminer.

As an example of such an underminer for an appearance proposition, Weisberg suggests the proposition I’ve just had a brain scan which betrays that I am an unreliable judge of my own colour experiences. Let us call this proposition “Brain scan”.
It is not clear, however, that this proposition *Brain scan* is genuinely an undercutting defeater for the appearance proposition. It may be that it plays a somewhat different role. Perhaps it is true that the more-or-less rational dispositions that normal thinkers have, which normally help them to achieve doxastically justified beliefs, would lead such normal thinkers to respond to becoming convinced of *Brain scan* by entertaining doubts about the appearance proposition. But this is not the same as *Brain scan*’s functioning as a genuine defeater, which removes all *propositional* justification for the proposition in question.\(^{18}\)

This reply to Weisberg’s objection is not *ad hoc*. It is thoroughly in keeping with all the standard versions of probabilism. According to these standard versions of probabilism, every probability function that rationally should guide any thinker at any time assigns probability 1 to every logical truth. In this way, everyone always has *propositional* justification for being maximally confident of every logical truth. But real thinkers never have dispositions that always put them in a position to have a doxastically justified belief in every logical truth— not even in every logical truth that they explicitly consider.

Moreover, thinkers could easily acquire evidence that we would expect to move them to lower their level of confidence in at least some logical truths. (For example, I might learn that *I have just had a brain scan that betrays that my abilities for proving logical truths are impaired.*) Within standard probabilistic frameworks, this evidence cannot defeat the propositional justification of any logical truth, since within such frameworks, the propositional justification of every logical truth is utterly indefeasible.

Still, theorists who adhere to standard probabilistic frameworks need to say something about why we expect normal thinkers’ level of confidence in complicated logical truths to falter, at least to some extent, in response to learning that their abilities for proving logical truths are impaired. As we have seen, these probabilistic theorists cannot say that the thinkers’ propositional justification for these logical truths is defeated. So, it seems most promising for these theorists to resort to the idea of the more-or-less rational dispositions that enable normal thinkers to achieve doxastically justified beliefs. These dispositions will never be perfect, and so it may be that your dispositions will sometimes lead you to have credences that differ at least to some extent from those that perfectly match the probability function that rationally should be guiding you. For example, perhaps sometimes these dispositions will lead you to have a lower-than-maximal level of confidence in a logical truth, or in a true experiential proposition about one’s current experiences, in response to a proposition to the effect that some of your abilities have been impaired.

Broadly speaking, this Cartesian model assimilates the epistemology of perceptual belief and the epistemology inference. So, this model can distinguish between undercutting or rebutting defeaters in exactly the same way as the account of inference that I mentioned in Section 1. Suppose that one has an experience as of p’s being the case—and that normally, in the absence of special defeating evidence, the appropriate prior probability assigns a high conditional probability to p given that you are having an experience of this sort. An *undercutting* defeater lowers the conditional probability of p, conditional on one’s having such an experience as of p’s being the case, *without* significantly changing the unconditional probability of p. A *rebutting* defeater not only lowers the conditional probability of p, conditional on one’s having such an experience, but *also* at the same time significantly lowers the unconditional probability of p.
One final question remains for the Cartesian model: Why should the appropriate prior probability function assign a high conditional probability to \( p \), conditional on you having an experience as of \( p \)'s being the case? In effect, this is the question of the significance of philosophical scepticism, transposed into the probabilistic framework that we are exploring here. I cannot attempt to address this question here. It will be enough if I can make it plausible that the probabilistic Cartesian is not without resources here.

On the face of it, there are in fact many different theories that the Cartesian model could appeal to here. For example, it could just appeal to a view like so-called subjective Bayesianism. According to subjective Bayesianism, it is rational for each thinker to proceed from the prior probabilities that correspond as closely as possible to the actual past beliefs that she has. It doesn’t matter if these actual past beliefs are influenced by all sorts of contingent chance events. They are the thinker’s starting point, and it is rational for the thinker to move ahead from whatever starting point she finds herself in. So, if you happen to start out with actual past beliefs of the right sort, the probability that corresponds as closely as possible to your actual past beliefs will also determine a high conditional probability for \( p \) given \( e \). In this way, an approach that resembles subjective Bayesianism in this way could explain the rationality of believing propositions about the external world in response to our sensory experiences.

Alternatively, a different approach might argue for a basic a priori principle of rationality concerning the appropriate prior probability function that should be conditionlized on any thinker’s current evidence to yield the probability function that rationally should be guiding the thinker at the current time. According to this alternative approach, it is just an a priori principle that normally—except in the presence of highly unusual evidence—this appropriate prior probability function must determine a high conditional probability for \( p \), given that the thinker have an experience as of \( p \)'s being the case. If the appropriate prior probability is constrained by this a priori principle, then this less subjective, more a priori approach could also explain the rationality of believing external-world propositions in response to sensory experiences. Each of these approaches looks prima facie promising. So it seems that the Cartesian model has resources that could enable it to answer this final question.

In conclusion, it looks as if the Cartesian model has a series of advantages over its two main rivals, while the objections that have been raised against this model can be addressed. Tentatively, we should conclude that the Cartesian model is the best way for a probabilist to account for the epistemology of perceptual belief.19

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1 For a probabilistic account of inference of the sort that I have in mind, see Wedgwood (2012)

2 If there is not a unique probability function that rationally should be guiding you, but only a big set of such functions, then there would be several alternative ways of reinterpreting this point. We could say (a) that to the extent that you are rational, any system of credences that you have should match one of these probability functions (although it doesn’t matter which one); this would be a kind of “permissivism” about rational credence. Alternatively, we could say (b) that for each proposition \( p \) that you have attitudes towards, you should have an “imprecise credence” in \( p \) that can be represented by this set of assignments of probabilities to \( p \). Or we could say (c) that in this case, both precise credences and imprecise credences are permissible. But I shall not pursue these complications further here.

3 For discussions of the distinction between propositional and doxastic justification, see Turri (2010) and Wedgwood (2017, 141f.).
I introduced this image of a rational angel in earlier work (Wedgwood 2018, 99). The angel should not be thought of as part of our actual empirical psychology: it is a metaphor for a component of what I have elsewhere called the “abstract virtue” of rationality (Wedgwood 2017, 140f.).

Further distinctions can be drawn between different kinds of defeaters; see especially Kotzen (forthcoming) for further details. For our purposes, however, the distinction that I have drawn here should be sufficient.

I believe that this use of the phrase ‘Me First!’ is due to Scott Sturgeon; I first heard him use the phrase in this way in seminars that he gave in Oxford in 2009.

I am here assuming a view of these first-person propositions that is similar to that of Evans (1982).

This point seems to be important for solving the problems that are raised by Arntzenius (2003).

This view of the content of sensory experience is defended by McDowell (1994), which can be detached from the “disjunctivist” view of experiences that McDowell combined with this view of their content.

For a philosopher who denies that knowledge is defeasible, see Lasonen-Aarnio (2010).


For this point, see Meacham (2010).

No one who hopes to rescue the proposals of the previous section could plausibly deny that the propositions that this probability function is defined over include e itself (the experiential proposition that you are having this experience). If they did not include e, they could hardly include propositions about the conditional chance of p given e.

Compare the “introspection principles” about the rational probability function that are defended by Wedgwood (2018).

Admittedly, not every such “short cut” will count as rationally performed—or “doxastically justified”, as most contemporary epistemologists put it. (For example, taking a short cut directly from believing Peano’s Axioms to believing Fermat’s Last Theorem would not normally count as doxastically justified.) For such a short cut to count as rationally performed, it must be the manifestation of a disposition that normally non-accidentally results in one’s having credences that (at least approximately) match the relevant probability. Wedgwood (2017, 141–4).

Intuitively, it seems that this “adjustment” of the agent’s prior beliefs must not only omit all propositions that are no longer available—like the proposition that one could have expressed at the earlier time by uttering the indexical sentence ‘I am now having an experience as of p’s being the case’. This “adjustment” will also have to assign a lower probability to propositions that are justified only because they are immediately supported by such no-longer available propositions—like the existential generalization of that proposition ‘There is a time at which I have an experience as of p’s being the case’. Unfortunately, I will not be able to explore this issue any further here.

Compare the discussion of Williamson’s anti-luminosity argument that is provided by Wedgwood (2017, 155–60). One of the key premises of Williamson’s argument is that there are limits to how finely our beliefs can discriminate between very similar cases. This is defended by appealing to the fact that our beliefs are causal responses to these cases. But while the issue of what causes our beliefs is clearly relevant to knowledge and to doxastic justification, it is not clearly relevant to propositional justification. So, there is no obvious reason for accepting that there is any analogue of Williamson’s argument for the propositional justification of beliefs.

Another philosopher who has argued that we have propositional justification (though not doxastic justification) for every such experiential truth is Smithies (2016, 405f.).

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