

# Ambiguous Statements about Akrasia

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**Abstract:** Epistemologists take themselves to disagree about whether there are situations where it is rational for one to believe that  $p$  while it is at the same time rational for one to believe that *one's evidence doesn't support  $p$* . The debate here is about the possibility of a certain kind of rational akrasia. In this paper, I point out that the embedded sentence 'one's evidence doesn't support  $p$ ' can be interpreted in two different ways, depending on what the semantic contribution of 'one's evidence' is taken to be. The first one treats 'one's evidence' as a sheer indexical, whereas the second one treats it as a descriptive singular term. It turns out that the first interpretation allows us to say that the relevant kind of rational akrasia is impossible, whereas the second one allows us to say that it is possible. But the proposition that is expressed by 'one's evidence doesn't support  $p$ ' according to each of these interpretations is not the same. We have thus a rational reconstruction of views that are labeled as being pro and con the possibility of rational akrasia, one according to which those views do not really contradict each other. For reasons that will be made clear at the end, however, the rational reconstruction suggests that those who have defended the possibility of rational akrasia might have the upper hand in this debate.

Much attention has been given lately to the question of whether it can be rational for one to be akratic. In some versions of the problem, the question is whether there are situations where it is rational for one to believe that  $p$  while it is at the same time rational for one to believe that *it is not rational for one to believe that  $p$* . Many other negative assessments regarding one's epistemic position with respect to  $p$  are candidates for the content of the higher-order belief that disavows the lower-order belief.<sup>1</sup>

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<sup>1</sup>For some of the discussion, see Sophie Horowitz, "Epistemic Akrasia," *Noûs*, XLVIII, 4 (2014): 718–44, Clayton Littlejohn, "Stop Making Sense? On a Puzzle about Rationality," *Philosophy and Phenomenological Research*, xcvi,

In this paper, I concentrate on the question of whether it can be rational for a subject to believe that  $p$  while it is at the same time rational for her to believe that *her evidence doesn't support  $p$* , regardless of whether the subject goes on and believes those things.<sup>2</sup> All the views that I will discuss here assume that what is rational for a subject to believe depends, perhaps among other things, on what her evidence is and what it gives support to. In particular, it is assumed that it is rational for a subject to believe that  $p$  only if her evidence supports  $p$  (her *total* evidence, or all her evidence that bears on the question of whether  $p$  is true—I will leave these qualifications implicit from now on). I will hold onto that assumption throughout the paper, and I will not discuss views according to which it can be rational for a subject to believe that  $p$  even though her evidence *does not* support  $p$ : the evidence is neutral about whether  $p$  or, worse, it gives support to  $\neg p$ .<sup>3</sup> Clarifications about the notions of evidence and evidential support will be made in due course.

The points that I want to make here have to do with the propositional contents of ascriptions of rationality to hold higher-order beliefs of the relevant sort. They are supposed to explain how some epistemologists can be led to think that there are situations where it is rational for a subject to believe that  $p$  and at the same time rational for her to believe that *her evidence doesn't support  $p$* , whereas other epistemologists are led to think that such situations are not possible. The intended explanation is in this way supposed to (a) present us with a rational reconstruction of the target epistemological views, or show how one can arrive at those views through perfectly good (deductive) reasoning, and (b) show that those apparently conflicting epistemological assessments can both be true at the same time.

Unsurprisingly, what makes (b) possible is the fact that 'it is rational for the subject to believe that  $p$  and it is at the same time rational for her to believe that *her evidence doesn't support  $p$* ' means different things in the mouths of each of the opposing parties. And that is not because those parties mean different things by 'rational' or even by 'supports'. They can be in perfect agreement about *that*. Rather, the relevant difference in meaning lies in the last bit of the quoted sentence, namely, the fragment 'to believe that *her evidence doesn't support  $p$* '. The italicized part stands for a proposition, or a possible content of a doxastic attitude—but there is more than one way of establishing what kind of proposition it is. In particular, there is more than one way of establishing what the semantic contribution of the indexical

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2 (2018): 257–72 and Maria Lasonen-Aarnio, "Enkrasia or evidentialism? Learning to love mismatch," *Philosophical Studies*, CLXXVII, 3 (2020): 597–632.

<sup>2</sup>For the idea that higher-order evidence affects *ex post* rationality or doxastic justification without necessarily affecting *ex ante* rationality or propositional justification, see Paul Silva, "How Doxastic Justification Helps Us Solve the Puzzle of Misleading Higher-Order Evidence," *Pacific Philosophical Quarterly*, XCVIII, S1 (2017): 308–28.

<sup>3</sup>In order to deal with 'basic' rational beliefs, we can assume that a total body of evidence that contains  $p$  supports  $p$  (although in a trivial sense), and that when one holds a 'basic' rational belief that  $p$  the proposition that  $p$  thereby counts as part of one's evidence.

phrase/apparently indexical phrase ‘her evidence’ is.

If the reconstruction that I put forward below indeed tracks the (somewhat implicit) way of thinking of the involved parties, then the resolution of what they take to be a disagreement about the possibility of rational akrasia depends either on what the target proposition more exactly is or, as I will explain in detail below, it simply depends on the resolution of a previous disagreement about how informative a subject’s evidence is about what that subject’s evidence is. Either way, progress on this issue would be made more likely by switching the debate to more basic questions, so to speak: either questions about the possible contents of higher-order beliefs of the relevant sort, or questions about the nature of evidence.

Here is how I will approach the issue. My point of departure will be the following question: Can it be rational for a subject to believe that her evidence doesn’t support  $p$  when her evidence does in fact support  $p$ ? More generally, the question is whether it can be rational for one to form false beliefs about what one’s evidence supports/fails to support. Call that question the ‘rational fallibility question’.<sup>4</sup>

There are two proper answers to the rational fallibility question, ‘yes’ and ‘no’.<sup>5</sup> Suppose there are cases where it is rational for a subject to believe that *her evidence doesn’t support  $p$* , even though her evidence in fact supports  $p$  (the answer is ‘yes’). So the subject’s evidence supports  $p$  while at the same time supporting the proposition that *her evidence doesn’t support  $p$* . The possibility that it is rational for a subject to believe that  $p$  while it is at the same time rational for her to believe that *her evidence doesn’t support  $p$* , then, is left open here. The only remaining question is whether other conditions for rational belief toward a proposition (other than evidential support) are satisfied for both the belief that  $p$  and the belief that *her evidence doesn’t support  $p$* .

Now suppose that, quite to the contrary, it cannot be rational for a subject

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<sup>4</sup>Relatedly, Whiting uses the label ‘infallibilism’ for the following view: If it is rational for a person to believe that it is irrational for them to believe that  $p$ , then it is irrational for them to believe that  $p$ —see §7 of Daniel Whiting, “Higher-Order Evidence,” *Analysis*, LXXX, 4 (2020): 789–807. That is, it cannot be rational for one to falsely believe that it is irrational for one to believe that  $p$ . Similarly, a negative answer to the rational fallibility question tells us that it cannot be rational for one to falsely believe that *one’s total body of evidence doesn’t support  $p$* . The only kind of infallibilist view that I will be discussing here, however, is what Whiting calls a ‘bottom-up’ view: in cases of misleading higher-order evidence, the lower-order belief is rational while the higher-order one is not. I won’t discuss what he calls ‘top-down’ infallibilism, according to which the higher-order belief is rational while the lower-order belief is not (I do not think that top-downers can deal with cases where the subject’s lower-order evidence *entails* that  $p$ , basically because entailment is a monotonic alethic relation, and no amount of higher-order evidence can ‘change’ that—but I won’t elaborate on this point here).

<sup>5</sup>Those who answer ‘yes’ include Timothy Williamson, “Very Improbable Knowing,” *Erkenntnis*, LXXIX, 5 (2014): 971–99, and Lasonen-Aarnio “Enkrasia or evidentialism?,” *op. cit.* Those who answer ‘no’ include Michael Titelbaum, “Rationality’s Fixed Point (or: In Defense of Right Reason),” in T. S. Gendler and John Hawthorne, eds., *Oxford Studies in Epistemology*, V. 5 (Oxford University Press, 2015), pp. 253–94, and also Declan Smithies “The Unity of Evidence and Coherence”, in Nick Hughes, ed., *Essays on Epistemic Dilemmas* (Oxford University Press, forthcoming). More on these authors’ views below. For attempts to find a ‘middle way’ between the opposite views here, see Kevin Dorst, “Evidence: A Guide for the Uncertain,” *Philosophy and Phenomenological Research*, c, 3 (2020): 586–632, and David Christensen, “Akratic (epistemic) modesty,” *Philosophical Studies*, CLXXVIII, 7 (2021): 2191–214.

to believe that *her evidence doesn't support p* when that subject's evidence in fact supports *p* (the answer is 'no'). Then it cannot be rational for a subject to believe that *p* and at the same time rational for her to believe that *her evidence doesn't support p*. For it can only be rational for her to believe that *p* if her evidence supports *p*—in which case it is not rational for her to believe that *her evidence doesn't support p*. So a negative answer to the rational fallibility question immediately delivers the verdict that it is never rational for one to hold both of the attitudes that constitute the relevant kind of akratic state. The rational fallibility question, then, carries a lot of weight. A positive answer to it leaves the door open for the possibility of the relevant type of rational akrasia, whereas a negative answer to it rules that possibility out completely (without even making use of the observation that there would be some kind of incoherence involved in the realization of the akratic state).<sup>6</sup>

## 1 The negative answer to the rational fallibility question

At first, the negative answer to the rational fallibility question might strike us as really odd. It says that it is never rational for a subject to believe that her evidence doesn't support *p* when her evidence supports *p*. But isn't it the case that, for pretty much any false proposition *f*, it is possible for it to be rational for one to believe that *f*?

That initial reaction notwithstanding, a defender of the negative answer could try and defend her view roughly as follows. It is not the case that, for *any* false proposition *f*, it can be rational for one to believe that *f*. For there is a class *C* of falsehoods such that no body of evidence ever confers any degree of support upon any of its members. The propositions that belong to *C* are not only false: it is also impossible for them to be true. Consider for example the propositions that *Maria is taller than herself*, or that *the brain is an organ and the brain is not an organ*, or that  $5 = 7$ . Arguably, no total body of evidence supports the truth of any of those propositions. A rough argument for that goes as follows: (i) supporting evidence is supposed to at least make that which it gives support to likely to be true; (ii) but nothing can make that which *cannot* be true likely to be true; (iii) the propositions in *C* cannot be true; (iv) so none of the propositions that belong to *C* are ever supported by any body of evidence. Furthermore, evidential support is a necessary condition for rationality. So it cannot be rational for one to believe any of

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<sup>6</sup>For the claim that there are cases of the relevant sort (the answer to the rational fallibility question is 'yes'), even though one is still rationally required not to believe that *p* while at the same time believing that *one's evidence doesn't support p*, see Alex Worsnip, "The Conflict of Evidence and Coherence," *Philosophy and Phenomenological Research*, xcvi, 1 (2018): 3–44. That would be a requirement of *coherence*, however, which Worsnip takes to be an independent dimension of rationality (one that doesn't boil down to facts about what the evidence supports). This view contrasts with the one that has previously been put forward by Niko Kolodny, "How Does Coherence Matter?," *Proceedings of the Aristotelian Society*, cvii (2007): 229–63.

the propositions that belong to  $C$ . Finally, falsehoods about which bodies of evidence support which propositions also belong to  $C$ . Which total body of evidence supports which propositions is not a contingent matter.

The broadly Bayesian, probabilistic way of thinking about evidential support vindicates the idea that some falsehoods are never supported by any body of evidence (at a minimum all logical falsehoods). According to this picture, whether a given body of evidence gives support to a proposition is a matter of how probable that proposition is conditional on that evidence, as measured by some probability function  $Pr$ .<sup>7</sup> Where  $E = \{e_1, \dots, e_n\}$  is a body of evidence, here construed as a set of propositions, we say that  $E$  supports  $p$  when  $Pr(p \mid e_1 \wedge \dots \wedge e_n) \geq t$ . That means that the probability of  $p$  conditional on the evidence is equal to or above a certain threshold  $t$  (we can make  $t = 1$  if we want, and we can also have  $t$  vary with context—let us leave these options open).

Conditional probabilities are computed through the ratio formula:  $Pr(p \mid q) = Pr(p \wedge q) / Pr(q)$ . The function  $Pr$  is distributed over a total set of possible worlds  $W$ , and we think of the probability of  $p$  as the probability of the set of possible worlds where  $p$  is the case.<sup>8</sup> Every member  $w$  of the total set of possible worlds  $W$  is assigned some initial probability  $Pr(\{w\})$ , so that  $Pr(W) = 1$ . The latter is actually one of the axioms of the probability calculus, from which it follows, together with the other axioms, that  $Pr(\{\}) = 0$  (the empty set weighs nothing).<sup>9</sup> If  $f$  is true at no possible world, then,  $Pr(f) = Pr(\{\}) = 0$  and, therefore,  $Pr(f \mid q) = 0$ , for any consistent proposition  $q$ . It follows that, for any consistent set  $E = \{e_1, \dots, e_n\}$ ,  $Pr(f \mid e_1 \wedge \dots \wedge e_n) = 0$ . Reverting this back to where we started: no necessary falsehood is supported by any consistent body of evidence. Here, the relevant class  $C$  of falsehoods is the class of propositions that are false in all members of  $W$ .

Of course, it is not that this theoretical framework must itself be part of the original idea that there is a class of necessary falsehoods such that no members of that class receive any support from any total body of evidence (and false claims about evidential support belong to that class—but see below for the alternative idea that a proposition about conditional probabilities has different truth-values in different possible worlds). That formal framework does indeed force us to be more explicit about our commitments, and it has the advantage of not making room for the possible ambiguities that pre-theoretical notions of evidential support make room for. But the defender of the original idea isn't necessarily committed to using it. The ingredients

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<sup>7</sup> $Pr$  might be interpreted as some kind of objective probability function. Alternatively, it might be taken to represent the credences that an ideally rational agent. For the former interpretation, see for example Timothy Williamson, *Knowledge and its Limits* (Oxford: Oxford University Press, 2000) and, for the latter, see Anna-Maria Eder, "Evidential Probabilities and Credences", *The British Journal for the Philosophy of Science* (forthcoming).

<sup>8</sup>So here we use  $Pr(p)$  as a shorthand for  $Pr(\{w \in W : p \text{ is true in } w\})$ . Similarly,  $Pr(p \wedge q)$  is shorthand for  $Pr(\{w \in W : p \text{ is true in } w\} \cap \{w \in W : q \text{ is true in } w\})$ .

<sup>9</sup>The axioms of the probability calculus are laid out in the Appendix below.

of the negative answer to the rational fallibility question can be more minimal than that. Any combination of views of the following sort would do:

- (a) Evidential support is an *alethic* relation between propositions. It is concerned with the bearing that certain propositions  $e_1, \dots, e_n$  have on the question of whether a given proposition  $p$  is true. In particular, where  $E = \{e_1, \dots, e_n\}$  is consistent and  $E$  entails that  $p$ , in the sense that it is *impossible* for all of  $e_1, \dots, e_n$  to be true and  $p$  to be false, it follows that  $E$  *does not* support  $\neg p$  ( $\neg p$  is the classical negation of  $p$ ). How could  $E$  support  $\neg p$  when it in fact entails that  $p$ ? Different notions of impossibility might be deployed to explain what kind of entailment is relevant here, for example, conceptual impossibility, or a priori impossibility,<sup>10</sup> or even metaphysical impossibility.
- (b) Evidential support is a necessary condition for the rationality of belief: it is rational for one to believe that  $p$  only if one's total evidence supports  $p$ . This is compatible with making further requirements for the rationality of belief, for example, that the subject appreciates or grasps the support relation between her evidence and  $p$ , or that she is able to reason from her evidence to  $p$ . It is just that the possibility that it is rational for one to believe that  $p$  when one's evidence does not support  $p$  is ruled out.
- (c) False propositions about evidential support belong to a class  $C$  of falsehoods such that no body of evidence supports any member of that class. Which propositions more generally belong to the relevant class  $C$ ? Any proposition  $q$  such that it is impossible for  $q$  to be true, in the same sense of 'impossible' that is at play in (a). Where  $q$  belongs to  $C$ , then, any total body of evidence entails that  $\neg q$  in the sense of (a)—it is impossible for  $e_1, \dots, e_n$  to be true and  $\neg q$  to be false, for any total body of evidence  $E = \{e_1, \dots, e_n\}$ . So no total body of evidence gives support to  $q$ .

We can see the combination of (a)–(c) as a *template* for negative answers to the rational fallibility question. Ideas about what more exactly the relevant class  $C$  of false propositions is, and concomitantly what the notion of entailment/impossibility in (a) is, can be taken from already existing views that forbid rationality or justification to believe falsehoods about rationality or justification. For example, both Declan Smithies and Michael Titelbaum put forward the idea that truths about rationality/justification are *a priori* knowable to us, so that their denials are *a priori* falsehoods (it is possible for one to know *a priori* that they are false).<sup>11</sup> We can

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<sup>10</sup>For a notion of *a priori* entailment/possibility see David Chalmers, *Constructing the World* (New York: Oxford University Press, 2012), especially chapters 1 and 2.

<sup>11</sup>In Declan Smithies, "Moore's Paradox and the Accessibility of Justification," *Philosophy and Phenomenological*

apply that idea to the (a)–(c) template from above as follows: the target class  $C$  includes any false proposition  $q$  such that it is *a priori knowable* that  $\neg q$ , or  $q$  is *epistemically impossible*, and falsehoods about which bodies of evidence support which propositions fit that description.

Most importantly for my present purposes, however, it is crucial for this strategy or anything that resembles it that by ‘it is not rational for the subject to believe that *her evidence doesn’t support  $p$* ’ it is meant that it is not rational for that subject to believe that  *$E$  does not support  $p$*  (assuming that that subject’s total evidence is actually  $E$ ). It is *that* proposition that is not supported by any body of evidence, including  $E$  itself, so that it is not rational for the subject to believe it. As I will explain below, that proposition (a ‘horizontal’ proposition) is to be contrasted with another proposition: one that is not necessarily about  $E$  itself (a ‘diagonal’ proposition).

## 2 The positive answer to the rational fallibility question

Consider now the following kind of situation. A subject’s evidence leaves open certain possibilities where her evidence differs from what it actually is. In the actual world her evidence is  $E$ —but that very evidence doesn’t exactly tell the subject that her evidence is  $E$ .<sup>12</sup>

With that in mind, we can now think of propositions that the subject might entertain such that (A) they are concerned with whether that subject’s evidence supports a proposition  $p$ , but (B) their truth-value changes from one possible world to the other, according as the subject’s own body of evidence changes from one possible world to the other. We might truly assert, then, that it is rational for that subject to believe that *her evidence doesn’t support  $p$* , even though her evidence is actually  $E$  and  $E$  supports  $p$ . Here the content encoded by the embedded sentence ‘*her evidence doesn’t support  $p$* ’ is not simply the proposition that  *$E$  doesn’t support  $p$* , but rather something like: *what ‘her evidence’ refers to doesn’t support  $p$*  (see the next section for alternative formulations). The thought is that, since what ‘her evidence’ refers to might vary from one possible world to the other, it is not necessarily the case that the proposition expressed by ‘her evidence doesn’t support  $p$ ’ always has the same truth-value in all possible worlds.

The point can be put as follows. As soon as the embedded sentence ‘*her evidence doesn’t support  $p$* ’ expresses a proposition that *can* be true, despite the fact that it

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*Research* LXXXV, 2 (2012): 273–300, Smithies uses the view that the relevant truths are *a priori* as part of a tentative explanation of why justification is accessible: one has/lacks justification to believe that  $p$  iff one has justification to believe that one has/lacks justification to believe that  $p$ . In Titelbaum “Rationality’s Fixed Point”, *op. cit.*, Titelbaum defends the Fixed Point Thesis, according to which mistakes about rationality are mistakes of rationality. His argument for that thesis actually features the claim that we are rationally required not to be akratic as a premise. I will get back to the Fixed Point Thesis in §5 below.

<sup>12</sup>See Williamson, *Knowledge and its Limits*, *op. cit.*, Ch. 8 for an argument against the transparency of evidence.

is actually false, there will be total bodies of evidence that confer support upon that proposition (this idea is formalized in the Appendix below). After all, a total body of evidence can make that which can be true likely to be true, even though it cannot make that which cannot be true likely to be true. And so, as far as the condition of evidential support is concerned, it can be rational for the subject to believe that *her evidence doesn't support p* even though her evidence actually supports *p*. As far as the condition of evidential support for the rationality of a belief goes, then, we are free to answer 'yes' to the rational fallibility question.

This way of addressing the rational fallibility question vindicates some of our initial reactions to particular cases. Suppose that my evidence indicates to me that my evidence is a certain body of evidence *F* (or, perhaps, that the evidence that I have that bears on the issue of whether *p* is *F*). My evidence also supports the proposition that *F doesn't support p*. In such a case, it may be rational for me to believe both:

- (1) *My evidence is F,*
- (2) *F doesn't support p,*

in which case it also seems rational for me to believe:

- (3) *My evidence doesn't support p.*

Since my evidence can support (1) and (2), it can also support (3). I believe that some of us would like to stick to that conclusion even under the further assumption that my evidence is actually *E* and that *E* supports *p* (say  $F \subset E$ : the propositions that belong to *F* are not enough to support *p*, but once we add the propositions that belong to *E* but not to *F* we have a set that is enough to support *p*).<sup>13</sup> And the way of addressing the fallibility question sketched above allows us to do just that.

Contrast that to the negative answer to the fallibility question from the previous section. The line of reasoning there was: since my evidence is *E*, *E* supports *p* and it is not a contingent matter that *E* supports *p*, my evidence does not (in fact cannot) give support to the proposition that *my evidence doesn't support p*—and so it is not rational for me to believe that proposition. These two lines of reasoning seem to issue contradictory verdicts, in that one of them says that it can be rational for me to believe that *my evidence doesn't support p* even when my evidence is *E* and *E* supports *p*, whereas the other one says that it cannot be rational for me to believe that *my evidence doesn't support p* in such a situation. But these two conclusions need not be contradicting each other: maybe what one of them is saying is that it can be rational for me to believe a proposition *x*, whereas the other one is saying

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<sup>13</sup>See Lasonen-Aarnio "Enkrasia or evidentialism?", *op. cit.* p. 611 for a similar setup.



that it cannot be rational for me to believe a proposition  $y$ —but  $x$  and  $y$  are not the same proposition (the fact that the same linguistic guise is used to express those two propositions notwithstanding). The next section says a bit more about what the relevant propositions could be.

### 3 The content of ‘My evidence doesn’t support $p$ ’

Suppose I sincerely utter: ‘My evidence doesn’t support  $p$ ’. What proposition is thereby expressed in the context that I am, or what is the content of my utterance? In what circumstances is what I said true?

Assume that, in the context where I utter that sentence—a certain time, place, speaker (that’s me) and possible world<sup>14</sup>—my evidence is  $E$ . Assume furthermore that  $E$  supports  $p$ . Then we presumably want to say that *what I said* is false. At the very least, it must be false in the possible world where I made the utterance (maybe it can still be true in other possible worlds). Similarly, we want to say that if I believe the proposition that was expressed through that utterance of mine, then I have a false belief.<sup>15</sup> And so, even if my evidence misleadingly suggests to me that my evidence is  $F$ , and  $F$  doesn’t support  $p$ , we better not take the proposition that is expressed by the sentence I have uttered to be the proposition that  *$F$  doesn’t support  $p$* —because that is true, whereas what I said is false.

If we treat ‘my evidence’ as an indexical expression and give it a Kaplanian treatment, in such a way that that expression lacks descriptive content,<sup>16</sup> then the proposition that is expressed by my utterance of ‘My evidence doesn’t support  $p$ ’ in the context described above is simply the proposition that  *$E$  doesn’t support  $p$* . The content of ‘my evidence’ is determined by a combination of my context of utterance and the *character* of that expression (a character is a function from contexts to contents). For example, the character of ‘I’ is something like: the speaker who is uttering the sentence. So we use a rule to the effect that ‘I’ refers to the speaker who is using that expression in order to determine what its content is. Similarly, the character of ‘my evidence’ is something like: the evidence that belongs to the speaker who is uttering the sentence. But the character by itself does less than specify the content of the indexical expression. When I say ‘my evidence doesn’t support  $p$ ’, then, the character of ‘my evidence’ teams up with the context of my utterance to

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<sup>14</sup>I am borrowing these elements of a context from David Kaplan, “Demonstratives”, in J. Almog, J. Perry and H. Wettstein, eds., *Themes from Kaplan* (New York: Oxford University Press, 1989), pp. 481–563.

<sup>15</sup>Consider the following abominable conjunction: the subject truly believes that *her evidence doesn’t support  $p$* , her evidence is  $E$  and  $E$  supports  $p$ .

<sup>16</sup>For this way of interpreting indexical expressions, see John Perry, “The Problem of the Essential Indexical,” *Noûs* LXXXV (1979): 3–21 and, again, Kaplan “Demonstratives”, *op. cit.* Notice, however, that to say that the expression lacks descriptive *content* is not yet to say that it lacks descriptive *meaning* (it has after all a *character*, which maps contexts into contents).

determine the content  $E$ , in such a way that the proposition thereby expressed is again the proposition that  $E$  supports  $p$ . This interpretation accords with the alethic assessment from the previous paragraph: what I said when I uttered ‘My evidence doesn’t support  $p$ ’ is false. For we are assuming, remember, that the evidence that I have when I make the target utterance is  $E$ , and we are also assuming that  $E$  supports  $p$ .

Another proposition that I might be expressing when I utter ‘My evidence doesn’t support  $p$ ’, however, is what Robert Stalnaker calls a ‘diagonal proposition’.<sup>17</sup> In the case at hand, that could be the proposition that *what ‘my evidence’ refers to at  $t$  is such that it doesn’t give support to  $p$* , or the proposition that *the sentence ‘my evidence doesn’t support  $p$ ’ (as uttered by me at  $t$ ) expresses a truth*. These are just some candidate diagonal propositions—there are others still that are not about expressions at all. Consider for example something like:  *$S$ ’s evidence at  $t$  doesn’t give support to  $p$* , where ‘ $S$ ’ is a proper name that refers to me, and  $t$  is again the time of my utterance. In either case, the semantic contribution of the expression ‘my evidence’ to the content of the sentence I have uttered isn’t simply the body of evidence that constitutes my body of evidence in the original context of utterance: that expression now behaves like a description, instead of a directly referential term. So the content of ‘my evidence’ (as used by me at  $t$ ) is either *what ‘my evidence’ refers to at  $t$*  or  *$S$ ’s evidence at  $t$* , or something along these lines. And since *what ‘my evidence’ refers to at  $t$*  or  *$S$ ’s evidence at  $t$*  need not be the same thing in all possible worlds, the proposition expressed by my original utterance will have different truth-values in different possible worlds.

The diagonal proposition is to be contrasted with the horizontal proposition. In the case at hand, the horizontal proposition is just the proposition that  $E$  doesn’t support  $p$ , which we saw is expressed by my utterance of ‘My evidence doesn’t support  $p$ ’ in the context described above when ‘My evidence’ behaves as a sheer indexical. Let the world where I make that utterance be the actual world @. I make that utterance at a certain time  $t$  in @, and my evidence at  $t$  in @ is again  $E$ . Now let  $w$  be another possible world where my evidence at time  $t$  is  $F$ .  $E$  supports  $p$ , but  $F$  doesn’t. Then, where the leftmost column contains the worlds that are part of the context of utterance at  $t$ , and the upper row contains the worlds where the target propositions are assessed as being true (T) or false (F), we can use the following matrix to illustrate the difference between the horizontal and the diagonal propositions:

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<sup>17</sup>See Robert C. Stalnaker, “Assertion,” *Syntax and Semantics* LXXXV (1978): 315–32.

	@	$w$
@	F	F
$w$	T	T

The diagonal proposition is the one that receives the evaluations marked in grey: it is the proposition that is false in @ but true in  $w$ . The proposition that is false in both @ and  $w$  is the (horizontal) proposition that *E doesn't support p*, and the one that is true in both @ and  $w$  is the (also horizontal) proposition that *F doesn't support p*. Now we can see that not only the horizontal, but also the diagonal proposition is false in @. So taking the content of my original utterance to be the diagonal proposition also allows us to say that *what I said* is false. For suppose that the content of my utterance of 'My evidence doesn't support  $p$ ' in @ at  $t$  is the proposition that *what 'my evidence' refers to at  $t$  is such that it doesn't support  $p$* . What 'my evidence' refers to in @ at  $t$  is  $E$ , and  $E$  supports  $p$ —so I said something that is actually false. But what I said might have been true. It is after all true in  $w$ .

#### 4 The content of 'it is/is not rational for the subject to believe that her evidence doesn't support $p$ '

I just made the contrast between the horizontal and the diagonal propositions by thinking of a situation where I myself utter the sentence 'My evidence doesn't support that  $p$ ' in the actual world @ at a certain time  $t$ , and where my evidence in that world at that time is  $E$ . My utterance of that sentence can express either of those propositions. But that was just a clarificatory expedient.

We can now think of two different attributors  $A1$  and  $A2$  assessing the epistemic situation of a subject  $S$  who is in a possible world  $w$  at a certain time  $t$ .  $S$ 's evidence in  $w$  at  $t$  is  $E$ . And  $E$  leaves open the possibility that  $S$ 's own evidence at  $t$  is  $F$ . We assume, again, that  $E$  supports  $p$ , whereas  $F$  doesn't. After reflecting on  $S$ 's situation, attributors  $A1$  and  $A2$  come up with the following assessments:

$A1$ : It is not rational for  $S$  to believe that *her evidence doesn't support  $p$* .

$A2$ : It is rational for  $S$  to believe that *her evidence doesn't support  $p$* .

$A1$  is accordingly a defender of the negative response to the rational fallibility question: it is not possible for it to be rational for  $S$  to believe that *her evidence doesn't support  $p$*  when the proposition that *her evidence doesn't support  $p$*  is false. Similarly,  $A2$  is a defender of the positive response to the rational fallibility question: it is rational for  $S$  to believe that *her evidence doesn't support  $p$* , despite the fact that the

proposition that *her evidence doesn't support p* is false in the possible world that *S* is in.

Notice that *S* herself doesn't have to utter anything here. The point is rather that *A1*'s utterance of 'It is not rational for *S* to believe that *her evidence doesn't support p*' is such that the embedded sentence '*her evidence doesn't support p*' stands for the proposition that *E doesn't support p*—a horizontal proposition. And *A2*'s utterance of 'It is rational for *S* to believe that *her evidence doesn't support p*' is such that the embedded sentence '*her evidence doesn't support p*' stands for the proposition that *what 'her evidence' refers to at t is such that it doesn't support p*, or the proposition that *S's evidence at t doesn't support p*—some such diagonal proposition. It turns out, then, that both *A1* and *A2* can be right at the same time: what one of them is saying doesn't in fact contradict what the other one is saying. And that can be so even if *A1* and *A2* agree that rationality is a function of evidential support, and they agree just as well that the denials of certain necessary truths are never supported by any body of evidence (suppose that there is no lingering difference in meaning behind their respective uses of 'rational' and 'supports').

To make the point explicit, *A1* and *A2* can both be right when they are assessing the situation of a subject *S* with the following features: *S*'s evidence in possible world *w* at time *t*, namely *E*, fails to give support to the proposition that *E doesn't support p*, even though it gives support to, say, the proposition that *S's evidence at t doesn't support p*. *A1* picks on the former fact, whereas *A2* picks on the latter one. Furthermore, when everything is made explicit in this way, *A2* might grant to *A1* that *E* does not give support to the proposition that *E doesn't support p*, since it is impossible for that proposition to be true and, therefore, it is false in every possible world that is left open by the subject's evidence *E*. And *A1* might grant to *A2* that *E* gives support to the proposition that *S's evidence at t doesn't give support to p*, since *E* might leave some possibilities open where *S*'s evidence at *t* is not the same as it is in *w*, and *S*'s evidence at *t* in those alternative scenarios does not give support to *p* (even though it does give support to *p* in *w*). The Appendix shows how we can cash this out more precisely in a formal setting.

## 5 Two examples from the literature

So *A1* and *A2* from above part ways—though they may not be aware of this—in that they interpret the embedded sentence '*her evidence doesn't support p*' in different ways. *A1* says that it is not rational for *S* to have a false belief about what her evidence supports because *A1* thinks that it is not rational for *S* to believe the proposition that *E doesn't support p*. And *A2* says that it is rational for *S* to have

a false belief about what her evidence supports because *A2* thinks that it is rational for *S* to believe the proposition that *S's evidence at t doesn't support p* (or something along these lines).

I do not take the situation between *A1* and *A2* to be merely possible or hypothetical. We can after all find defenders of the negative answer to the rational fallibility question in the literature who are most reasonably interpreted as thinking in the way that *A1* is thinking. And we can also find defenders of the positive answer to the rational fallibility question who are most reasonably interpreted as thinking in the way that *A2* is thinking.

As a representative example of the former, consider Titelbaum's Fixed Point Thesis, according to which "No situation rationally permits an a priori false belief about which overall states are rationally permitted in which situations."<sup>18</sup> In the evidentialist version of that thesis, a subject's 'situation' will be her total body of evidence. To use Titelbaum's own notation, let  $r(s)$  be the set of doxastic states that are rationally permissible for a subject who is in situation  $s$ . The Fixed Point Thesis says, then, that any false belief about the values of  $r(s)$  is rationally forbidden, for any situation  $s$ . Where  $o$  is a doxastic state and it is false that  $o \in r(s)$ , no situation rationally permits a belief that  $o \in r(s)$ . It is *that* proposition that is never rational for one to believe (in particular, it is not rational for a subject who is in the very situation  $s$  to believe it). The proposition that  $o \in r(s)$  is of course a horizontal proposition. Even though my situation might be different from what it actually is,  $s$  is the same situation in every possible world. Accordingly, even though the doxastic attitudes that are rationally permitted by my situation might be different from what they actually are, the same doxastic states belong to the set  $r(s)$  in every possible world. That looks exactly like *A1's* line of thought.

Of course, when it comes to the point that it is not rational for a subject to hold akratic combinations of attitudes, it matters that the target proposition is about the subject's situation described as her situation—a point that is explicitly acknowledged by Titelbaum.<sup>19</sup> To try and account for that, we can either include the self-identifying element in the guise or mode of presentation of the target proposition, or we can construe it as being true/false across a range of centered possible worlds (centered on particular a subject and/or time).<sup>20</sup> Either way, however, the relevant propositional content will still be  $o \in r(s)$  which, if false, is false in every possible world, centered or not.

As a representative example of *A2's* way of thinking, consider Lasonen-Aarnio's

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<sup>18</sup>Titelbaum, "Rationality's Fixed Point," *op. cit.*, p. 261.

<sup>19</sup>Titelbaum, *ibid.* p. 262.

<sup>20</sup>For a critical discussion about centered worlds, as well as further references to the literature on the problem of essential indexicals, see Shen-yi Liao, "What are centered worlds?," *The Philosophical Quarterly*, LXII, 247 (2012): 294–316.

point that, in cases of introspection failure, one's evidence might give support to false propositions about what one's evidence supports/about what is likely to be true on one's evidence. She writes:

Assume that  $p$  is part of Mosi's evidence. In virtue of containing  $p$ , Mosi's evidence makes  $q$  likely—but  $p$  is the only item of evidence Mosi has that supports  $q$ . Because  $q$  is likely, Mosi is permitted to believe  $q$ , or at least be highly confident in  $q$ . However, it is not certain on Mosi's evidence that  $p$  is part of his evidence. Perhaps, for instance, it is only 50% likely that  $p$  is part of Mosi's evidence. Then, it may only be 50% likely on Mosi's evidence that his evidence makes  $q$  likely and hence, that he is permitted to believe  $q$ .<sup>21</sup>

Let  $w$  be the possible world where  $E$  is Mosi's evidence at  $t$ , and  $p \in E$ , so that  $E$  supports  $q$ . Why would the observation that it is not certain on Mosis's evidence that  $p$  is part of his evidence in  $w$  at  $t$  be relevant to the question of whether it is rational for him to believe that  $E$  supports  $q$  (or that  $q$  is likely conditional on  $E$ )?

The answer, of course, is that it is not relevant to that question at all. But that observation is relevant to the question of whether it is rational for him to believe (in  $w$  at  $t$ ) the proposition that *Mosi's evidence at  $t$  supports  $q$* , since *Mosi's evidence at  $t$*  can be different things at different possible worlds. Or think of the proposition that *what 'his evidence' refers to at  $t$  is such that it supports  $q$* . The observation that it is not certain on Mosi's evidence that  $p$  is part of his evidence in  $w$  at  $t$  is also relevant to the question of whether it is rational for Mosi to believe that proposition as well. Accordingly, Lasonen-Aarnio's embedded sentence 'his evidence makes  $q$  likely' in the last sentence of the quote from above does not just stand for the proposition that  $E$  makes  $q$  likely. It stands rather for a horizontal proposition that can be true in some possible worlds, false in others, according as Mosi's evidence at  $t$  changes from one possible world to another. That looks exactly like  $A2$ 's line of thought.<sup>22</sup>

## 6 Different sources of disagreement

If the one epistemologist is saying that it is not rational for  $S$  to believe a proposition  $p$ , whereas another one is saying that it is rational for  $S$  to believe a different proposition  $q$ , where  $p$  and  $q$  are themselves not in conflict with each other, then why do those epistemologists act as if they disagree with each other? One reasonable explanation is that they disagree about *something*. But what could that be?

<sup>21</sup>Lasonen-Aarnio, "Enkrasia or evidentialism," *op. cit.*, p. 611.

<sup>22</sup>So does Williamson's in his "Very Improbable Knowing", *op. cit.*

The considerations from above suggest one possibility: they might disagree about which proposition is ‘the right one’ when it comes to capturing the contents of what one’s thoughts about what one’s evidence supports would be, or about what it means to say ‘to believe that *one’s evidence doesn’t support p*’. It might then strike us as a surprise that the resolution of the target epistemological issue depends on the resolution of questions concerned with mental content, propositions, and how they are connected to our ways of talking (philosophy of mind and language as a remedy for epistemological concerns). But another possibility is that the root disagreement is a disagreement about the nature of evidence, even when both epistemologists take evidence to be/to be reconstructible as sets of propositions. In this case, it would be a disagreement about how informative one’s evidence is about what one’s evidence is.

Suppose it is clear to  $S$  in  $w$  at  $t$  that her evidence is  $E$ . Then it becomes fixed throughout the whole space possibilities that are left open by  $E$  that her evidence at  $t$  is  $E$ . There is no variation in what  $S$ ’s evidence at  $t$  could be anymore—at least not within the space of possibilities that are left open by  $E$  itself. In this case, the difference between assessing whether  $S$ ’s evidence supports the proposition that  $E$  *doesn’t support p* and assessing whether  $S$ ’s evidence supports the proposition that  $S$ ’s evidence at  $t$  *doesn’t support p* is less important. If one is supported by  $E$ , then so is the other.

And so there are epistemologists taking part in the debate about the possibility of rational akrasia that defend that evidence-possession has a transparent status for the subject. They are then in a sense free to advance the view that it is not possible for it to be rational for one to have false beliefs about what one’s evidence supports, regardless of whether those are horizontal or diagonal propositions.<sup>23</sup> The view that the subject’s evidence is transparent to that very subject completely blocks the kind of situation whose alleged possibility leads to the positive answer to the rational fallibility question. Continuing with Lasonen-Aarnio’s example from above, it couldn’t be the case that  $p$  is part of Mosi’s evidence even though Mosi’s evidence doesn’t give support to the proposition that  $p$  *is part of Mosi’s evidence*. And the defender of the transparency of evidence can say this even though she takes ‘Mosi’s evidence’ to have descriptive content. The meaning of that singular term isn’t just simply a set of propositions  $\{a, b, \dots, p\}$ , and the proposition expressed by ‘ $p$  *is part of Mosi’s evidence*’ isn’t just the proposition that  $p \in \{a, b, \dots, p\}$ .

Needless to say, that optimistic view about the transparency of evidence is controversial.<sup>24</sup> And, once we bracket that view, the difference between the horizontal

<sup>23</sup>For a representative if rare example of this line of thought, see again Smithies “The Unity of Evidence and Coherence,” *op. cit.*

<sup>24</sup>See again Williamson, *Knowledge and its Limits*, *op. cit.*, Ch. 8 for influential arguments to the contrary.

and the diagonal proposition makes itself relevant to the rational fallibility question and the possibility of rational akrasia again. For whereas the proposition that  $\{a, b, \dots, p\}$  supports  $q$  will have the same truth-value across all possibilities, the truth value of the proposition that *Mosi's evidence at  $t$  supports  $q$*  will vary across those possibilities. And, in particular, the truth-value of the latter might vary across the possibilities that are left open by Mosi's very evidence at  $t$ . Once we make room for the non-transparency of evidence, we thereby make room for that kind of situation.

## 7 Concluding remarks

What I have done in this paper thus far was to rationally reconstruct negative and positive verdicts about the possibility of rational akrasia, respectively, and thereby show that epistemologists who issue those verdicts aren't necessarily expressing mutually inconsistent propositions when they do so.

Certainly one could dispute the premises that, according to the reconstruction, lead to the negative and the positive answers to the rational fallibility question, and thereby to the question about the possibility of rational akrasia. For example, regarding the *negative* answer, one could dispute the thesis that no body of evidence gives support to the relevant kind of necessary falsehood. It may be, for example, that the testimony of a reliable logician gives the subject good evidence to believe a logical falsehood.<sup>25</sup> And, regarding the positive answer to that question, one could again dispute the presupposition that a subject might not know what her own evidence is. But none of that means that the target epistemological views haven't been rationally reconstructed. For the reconstruction is not supposed to imply that the reasoning that leads to each of those views is undisputable. It is just that the reasoning is good (because valid) and it departs from premises that seem to be true or are *prima facie* plausible.

The reconstruction offered here seems to be neutral on the debate at issue, because it vindicates responding 'It depends' to the question 'Is rational akrasia possible?'. Let an ascription of rational akrasia be a sentence of the form 'It is rational for the subject to believe that  $p$ , and it is also rational for her to believe that *her evidence doesn't support  $p$* '. If the fragment '*her evidence doesn't support  $p$* ' stands for a horizontal proposition, the reconstruction vindicates answering 'Yes', but if that fragment stands for a diagonal proposition the reconstruction vindicates answering 'No' to the question about the possibility of rational akrasia. On the face of it, this reconstruction seems to discourage us from following up with: 'But is rational akra-

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<sup>25</sup>This venue of dispute/disagreement was suggested to me by an anonymous referee for the *Journal of Philosophy*, to whom I am very thankful.



sia after all possible or not?'. The answer is always going to be 'It depends', or 'It depends on what you mean by *'her evidence doesn't support p'*'.

As pointed out by an anonymous referee for the *Journal of Philosophy*, however, the rational reconstruction offered above also invites us to consider the following question: would believing that  $p$  while at the same time believing that *my evidence doesn't support p* make me akratic/incoherent on the assumption that the fragment '*my evidence doesn't support p*' expresses a diagonal proposition such as the ones mentioned above? It seems like it does.

Let ' $S$ ' again be a proper name that refers to me, and assume that I know that *I am S*. It then seems incoherent for me to believe that  $p$  at  $t$  while at the same time believing that *S's evidence at t doesn't give support to p* (here we stop using the personal pronoun exactly to make it clear what the target proposition is). Of course, if I were to believe that *S is some other person than myself*, then there would be no incoherence—but I actually believe that *I am S*. Finally, notice that it is perfectly possible for a total body of evidence to give support to  $p$  and to the proposition that *S's evidence at t doesn't give support to p*. After all, the latter proposition can be true in some possible worlds. And nothing seems to get in the way of the possibility that such a total body of evidence is my own total body of evidence at time  $t$  (nothing other than the implausible assumption, again, that my evidence always contains all the accurate information about what is part of my total body of evidence).

A defender of the possibility of rational akrasia could say all this while granting to her opponent, *arguendo*, that the horizontal proposition that is expressed by '*my evidence doesn't support p*'—something of the form *E doesn't support p*—is never supported by any body of evidence. But she will keep pressing on the point that it is incoherent for me to believe that  $p$  at  $t$  while at the same time believing that *S's evidence at t doesn't give support to p* (given that I also believe that *I am S*). It seems, then, that the reconstruction offered above is not neutral on the debate about the possibility of rational akrasia after all. On closer inspection, it suggests that the defender of that possibility has the upper hand at the end of the day. So the reconstruction doesn't issue the verdict that we have to answer 'It depends' in response to the question 'Is rational akrasia possible?'. On the assumption that believing that  $p$  while believing the aforementioned diagonal proposition makes me akratic, the answer is rather 'Yes'.

## Appendix

Here I formalize the two lines of thought described in the paper. One of them, remember, says that  $S$ 's evidence in  $w$  at  $t$ , namely  $E$ , does not give support to the proposition that  $E$  doesn't support that  $p$  (assuming that  $E$  in fact gives support to  $p$ ), whereas the other one says that  $S$ 's evidence in  $w$  at  $t$  supports the proposition that  $S$ 's evidence at  $t$  doesn't support  $p$  (or something along these lines, as long as there is change of reference from one world to the next). For that reason, the defender of the former line of thought (A1) utters 'It is not rational for  $S$  to believe that *her evidence doesn't support  $p$* ', whereas the defender of the latter line of thought (A2) utters 'It is rational for  $S$  to believe that *her evidence doesn't support  $p$* .'

To formalize this, I use the framework of possible worlds semantics. To represent the situation of a subject  $S$  across a relevant range of possibilities, we use a frame  $\langle W, R, Pr \rangle$ , where  $W$  is a total set of possible worlds or ways the world might be,  $R$  is an accessibility relation that maps each member of  $W$  into a subset of  $W$ , and  $Pr$  is a prior probability distribution over  $W$ . We can assume that the members of  $W$  are centered on a time and subject, so that every  $x \in W$  contains reference to time  $t$  and subject  $S$  (which I will leave implicit in order to avoid cluttering).

Propositions are construed as sets of possible worlds. A proposition  $p$  is true in a possible world  $x$  when  $x \in p$ .  $R(x)$  is the set of possible worlds that are left open by the subject's evidence in  $x$ —or the ways the world might be according to the subject's evidence in  $x$ . A proposition  $p$  counts as part of the subject's evidence in  $x$ , then, when  $R(x) \subseteq p$ .

The set  $R(x)$  thereby encodes everything that is part of the subject's total body of evidence in  $x$ . A prior probability is assigned to every proposition that is constructible from  $W$  as follows: where  $p = \{x_1, \dots, x_n\}$ ,  $Pr(p) = Pr(\{x_1\}) + \dots + Pr(\{x_n\})$ . What makes this possible is the fact that  $Pr$  'starts off' by assigning a real number between 0 and 1 to every member of  $W$ . Since  $Pr$  is a probability function, it abides by the following axioms:

$$(P1) \ Pr(W) = 1,$$

$$(P2) \ 0 \leq Pr(p) \leq 1, \text{ for all } p \subseteq W,$$

$$(P3) \ Pr(p \cup q) = Pr(p) + Pr(q) \text{ for all } p, q \subseteq W \text{ such that } p \cap q = \{\}.$$

Next, we explicate the notion of evidential probability.  $Pr_x(p)$  is the evidential probability of  $p$  in  $x$ , which is just the probability of  $p$  conditional on the evidence that is possessed by the subject in  $x$ . The evidential probability of  $p$  in  $w$  is computed from the prior probability distribution as follows:  $Pr_x(p) = Pr(p \mid R(x)) = Pr(p \cap$

$R(x))/Pr(R(x))$ . For modelling sake, we assume that  $Pr(\{x\}) > 0$  for all  $x \in W$ , so that these conditional probabilities are always defined.

With all this in place, we can now establish some common ground between  $A1$  and  $A2$  regarding evidence possession and evidential support. They agree that  $R(w)$  encodes all the evidence  $E$  that is possessed by  $S$  in  $w$ . That is,  $E$  is a set of propositions such that  $p \in E$  if and only if  $R(w) \subseteq p$ . They also agree that evidential support is a matter of high (possibly maximal) evidential probability. More formally, they agree that for any body of evidence  $F$  and  $x \in W$ , assuming that  $F$  is the set of propositions such that  $p \in F$  if and only if  $R(x) \subseteq p$ ,  $F$  gives support to  $p$  if and only if  $Pr_x(p) = Pr(p \mid R(x)) \geq t$ , where  $0.5 < t \leq 1$ .

$A1$  and  $A2$  are again looking at  $S$ 's situation in  $w$  (at a time  $t$ ). Both of them make their assessments about  $S$ 's situation by uttering a sentence containing the fragment '*her evidence doesn't support p*'. But they take that expression to stand for different propositions. Specifically,  $A1$  takes it to stand for the following proposition:

$$a_1 = \{x \in W : Pr_w(p) < t\} = \{x \in W : Pr(p \mid R(w)) < t\}.$$

More informally,  $a_1$  is the set of worlds where  $E$  doesn't support  $p$ . We can also represent it thus:  $\{x \in W : E \text{ doesn't support } p \text{ in } w\}$ . Notice that 'in  $w$ ' is *otiose* there (in contrast, see  $a_2$  below). That is precisely because the proposition that  $E$  *doesn't support p* has the same truth-value in every possible world. Formally, this means that  $Pr(p \mid R(w)) < t$  has the same truth-value in every possible world. Where ' $\models$ ' is the truth-making relation, or truth in the world of a model  $M = \langle W, R, Pr \rangle$ :

$$M, x \models Pr(p \mid R(w)) < t \text{ iff } Pr(p \cap R(w))/Pr(R(w)) < t, \text{ for any } x \in W.$$

So either  $a_1$  is the whole set  $W$  or it is the empty set  $\{\}$ . But we were assuming that  $E$  supports  $p$ , in such a way that:

$$M, x \models Pr(p \mid R(w)) \geq t, \text{ for any } x \in W.$$

So  $a_1$  is the empty set after all, that is,  $a_1 = \{\}$  ( $a_1$  is true in no possible world). And since:

$$M, x \models Pr(\{\} \mid R(x)) = 0, \text{ for any } x \in M,$$

it follows that  $a_1$  isn't supported by any body of evidence. In particular,  $Pr(a_1 \mid R(w)) = 0$ , so that  $S$ 's evidence in  $w$  does not give support to  $a_1$ . What does  $A1$  conclude from this? She declares that '*It is not rational for S to believe that her evidence doesn't support p*', because  $S$ 's evidence in  $w$  does not give support to  $a_1$ , and  $a_1$  is the proposition that  $A1$  takes the embedded sentence '*her evidence doesn't*

*support p*’ to stand for.

In contrast, *A2* takes that embedded sentence to stand for the following proposition:

$$a_2 = \{x \in W : Pr_x(p) < t\} = \{x \in W : Pr(p | R(x)) < t\}.$$

More informally,  $a_2$  is the set that contains every possible world  $x$  such that  $S$ ’s evidence there, in  $x$ , does not support  $p$ . We can also represent it thus:  $\{x \in W : S$ ’s evidence in  $x$  doesn’t support  $p\}$ . Now notice that ‘in  $x$ ’ (or ‘ $R(x)$ ’) is bound in the definitional notation of this set—now *there is* a connection between what goes into the set and what defines what goes into the set. In contrast to  $a_1$ ,  $a_2$  can have different truth-values at different worlds. So even though, as before:

$$M, w \models Pr(p | R(w)) \geq t,$$

there still can be worlds  $x \in W$  such that:

$$M, x \models Pr(p | R(x)) < t,$$

and  $R(w)$  contains some of these worlds  $x$ . Besides, the probabilistic distribution might also be such that  $Pr(a_2 \cap R(w)) / Pr(R(w)) \geq t$ , in which case  $Pr(a_2 | R(w)) \geq t$ . *A2* will then declare that ‘It is rational for  $S$  to believe that *her evidence doesn’t support p*’, because  $S$ ’s evidence in  $w$  gives support to  $a_2$ , and  $a_2$  is the proposition that *A2* takes the embedded sentence ‘*her evidence doesn’t support p*’ to stand for.

Since both of these can hold at the same time:

$$M, w \models Pr(a_1 | R(w)) < t,$$

$$M, w \models Pr(a_2 | R(w)) \geq t,$$

*A1* and *A2* can both be right at the same time (given *what they mean* through their utterances).