

# Questions for Uniqueness

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## **Abstract**

In this paper, I argue that the so-called Uniqueness Thesis, or Uniqueness, is untenable because we cannot conceive of epistemic rationality as free of any practical components. Uniqueness states that given the same body of evidence, there is at most one rational doxastic attitude taken towards any proposition. Some authors, on the other hand, argue that it is rationally permissible to hold differing doxastic attitudes; call that view Permissivism. First, I provide a precise formulation for Uniqueness and evaluate some of the arguments for and against it. I show that many extant arguments against Uniqueness are question-begging and why these arguments fail. Finally, I offer a better argument against Uniqueness. My argument brings out that rational belief is not determined solely by evidence but also by the questions that guide one's inquiry.

# Questions for Uniqueness

## 1. Introduction

Given the same body of evidence, is it rational to possess differing doxastic attitudes towards a certain proposition? Some authors argue that it is permissible; call that Permissivism. Others oppose this view and argue for the so-called Uniqueness Thesis, or Uniqueness, which states that for agents with the same body of total evidence, there is at most one rational doxastic attitude taken towards any proposition. In this paper, I will argue that Uniqueness is untenable because we cannot conceive of epistemic rationality as free of any practical components. Although arguments have been provided for and against Uniqueness based on practical grounds, these arguments treat doxastic attitudes in a way similar to bodily actions. The practical component that I discuss here, on the other hand, is restricted to knowledge, i.e. how one inquires.

Kopec and Titelbaum (2016) point out that three versions of Uniqueness – *Propositional*, *Attitudinal*, and *Personal* – come out of the two formulations first offered by Feldman (2007) and White (2005). Feldman formulates Uniqueness as follows:

This is the idea that a body of evidence justifies at most one proposition out of a competing set of propositions (e.g., one theory out of a bunch of exclusive alternatives) and it justifies at most one attitude toward any particular propositions (2007: p. 405).

Feldman's formulation is a conjunction of two theses. The first pertaining to "at most one proposition" which Kopec and Titelbaum label as Propositional Uniqueness. The second, "at most one attitude", is labeled as Attitudinal Uniqueness.

It is unclear what Feldman refers to as "a competing set of propositions". If we take the example Feldman gives, i.e. exclusive alternatives, this is understood as a proposition and its negation. Another interpretation considers competing propositions as propositions that may have some

overlap in their contents. This paper rejects the latter as there can be more than one proposition rationally justified given one's total evidence. Thus, instead of referring to a proposition's negation, e.g. not- $P$ , I refer to it as propositions-other-than  $P$ , abbreviated as pot- $P$ . Additionally, the view of propositions discussed here takes propositions as objects of one's propositional attitude, hence, rejecting Attitudinal Uniqueness. A different proposition entails having a different propositional attitude; and an attitude rejecting a proposition can be generalized as not- $P$ . I am not using pot- $P$  and not- $P$  interchangeably here as I try to stay true to their specialized uses. Note, however, that pot- $P$  is a broader and more general term than not- $P$ .

The case discussed here also takes up a theme surrounding Personal Uniqueness, which corresponds to White's formulation of the thesis. White formulates Uniqueness as follows:

Given one's total evidence, there is a unique rational doxastic attitude that one can take to any proposition (2005: p. 455).

Though some have pointed out that this formulation by White only pertains to a single agent (Kelly 2013; Meacham 2014; Schoenfield 2014), I am setting that aside. We imagine the case discussed here as comparing either the doxastic attitudes of two agents or two instances of the same agent, as long as this agent(s) is constrained by the conditions of Uniqueness formulated in §2.

While direct counterexamples have been offered (e.g. Brueckner and Bundy 2012; Kopec 2015; Raleigh 2017), my aim in this paper is to challenge a presupposition of Uniqueness, namely, that epistemic rationality is devoid of any practical influence. Feldman (2007), for example, presses the point that the interest in Uniqueness "is in the epistemic, or evidential, evaluations" and not of practical rationality and that "a belief is reasonable *only* when it has adequate evidential support" (p. 203, *my emphasis*).<sup>1</sup> Those who write about the topic, whether for or against Uniqueness, seem to follow suit in this presupposition – that epistemic rationality is free of any practical influences (see Horowitz 2014; Christensen 2016; Greco and Hedden 2016; Kopec and Titelbaum

2016; Sharadin 2017). Thus to say it explicitly: the goal of this paper is to show that even if we grant the strict demands of Uniqueness, it is still not going to yield the same rational doxastic attitudes because epistemic rationality is not only about one's evidence, but also, how one inquires.

The presupposition that epistemic rationality is free of any practical influences seems to conflict with some of the more recent papers, as the discussions are centered on the *value* of epistemic rationality. Horowitz (2014, also 2018; a direct response is offered by Schoenfield 2018) argues that it is *valuable* to promote *unique* rationality, as it promotes accuracy in getting at the truth. A particular view of epistemic rationality, however, might suggest that this conflates epistemic rationality with instrumental rationality.<sup>2</sup> Kelly (2003), for example, argues against what is considered a means-end (instrumental) view of epistemic rationality. Instead, for Kelly (2002), “practical considerations do not rationalize beliefs. With respect to beliefs, rationality just is epistemic rationality”. Kopec (2015) also points out that Uniqueness would be incompatible with *epistemic instrumentalism*, the view I just described. Yet, many who write about the topic have argued based on the *value* of being epistemically *unique*.<sup>3</sup> I am not taking a firm stance on whether epistemic instrumentalism is not purely epistemic. Instead, I consider that the view is also strictly epistemic, the same way the view I offer here is epistemic.

The rest of the paper is structured as follows: In §2, I evaluate some of the arguments for and against Uniqueness. I provide a formulation of Uniqueness based on the literature that argues for it. I show that many extant arguments against Uniqueness are question-begging and why these arguments fail. In §3, I offer a better argument against Uniqueness using tools from possible worlds semantics drawn from Stalnaker (1984) and Yalcin (2018). In §4, following Friedman (2013, 2017, 2018, 2019, ms.), my arguments will bring out that rational belief is not determined solely by

evidence but also by the questions that guide one's inquiry. Finally in §5, I show how we can incorporate credences and conditionalization into the formal model I am proposing in this paper.

## **2. Unique and Permissive Updating**

In order to see that many arguments against Uniqueness are question-begging, we must be precise in our formulation of the thesis.

**UNIQ** Two fully rational subjects must have the same doxastic attitude towards any proposition  $P$  if (1) they started with the same prior probabilities, (2) they possess the same body of total evidence, and (3) they have the same sensitivity to evidence.

Some arguments against Uniqueness fail because they ignore conditions (1)-(3). The subsections in this section discuss each condition. To further aid the discussion, consider the following case<sup>4</sup>:

**JURY** Agents Pula and Lila are serving as members of the jury in the trial of SuSpect for the alleged murder of VicTim. Both Pula and Lila will be exposed to the same body of total evidence. They will be asked whether they believe the proposition that SuSpect murdered VicTim (i.e. " $P$ " for this case).

### **2.1. Prior Probabilities**

White (2005) claims that what he calls 'Extreme Permissivism' is problematic. Extreme Permissivism is the view that rational agents can have different prior probabilities, i.e., different credences regarding a proposition even before either agent encounters any evidence for or against that proposition. In the account of propositions that I'll discuss in §3, different priors would also mean that agents begin with two different propositions. Because agents' previous evidence are different, it would mean that they have different starting points, both for their credences and their base propositions. In order to provide a richer presentation of the arguments within the literature, at least for this section, I focus on quantitative attitudes or credences.

In JURY, it is required that our agents avoid all biases. Uniqueness proposes that we should start with a neutral credence, or, at least, Uniqueness is meant to apply only when this condition holds. Permissivists reject this claim as there is no clear account of what one's neutral credence should be (see Kelly 2013; Kopec and Titelbaum 2016; Meacham 2014; Schoenfield 2014, 2018). But if there are different fully rational prior credence functions before one acquires new evidence, then we can deduce that agents can have different results once they update their credence functions in light of new evidence. Thus, they argue that Uniqueness fails.

Although I take it that identifying what these *unique* priors might be is a pipe dream, this argument begs the question against UNIQ, in particular, condition (1). When applying Uniqueness, we assume that different agents started with the same priors. In JURY, e.g., we assume that jurors are able to ignore any interfering *old evidence*.<sup>5</sup> If this assumption is false in a particular case, UNIQ is trivially true for that case because its antecedent is false.

## **2.2. Scope of Evidence**

One might erroneously think a case is a counterexample to Uniqueness if the case is one in which agents differ in their total evidence. Uniqueness would only apply to instances wherein agents have the same body of total evidence.<sup>6</sup>

One example found in the literature appeals to the plausibility of disagreement or variation in judgement in a jury case (see Rosen 2001). It seems intuitive that jurors would disagree given the same evidence presented *within* the trial. But we must also take into account that there are other information that might be available to them that makes it the case that they actually possess differing evidence, i.e. *outside* the trial case (White 2013). For example, one juror might have an implicit bias that favors people who wear wristwatches. Let's suppose they had previous experiences with people who wear wristwatches that are generally truthful with their statements; and

thus, made them infer that all people who wear wristwatches are truthful with their statements. Suppose also that a witness who is wearing a wristwatch gives a testimony that SuSpect did not murder VicTim. One juror's credence whether the testimony is true or not shouldn't be influenced by wristwatch-wearing if the other juror doesn't have this previous encounter with people who wear wristwatches. One instance wherein there is differing evidence among agents is when they have differing *old evidence*. In this case, one's upbringing and previous experiences could count as part of the total evidence. However, as we have noted in §2.1, instances of old evidence, i.e. priors, should not differ as it will interfere whether we judge *P* or not-*P*.<sup>7</sup>

Another instance where we'd find a change in the total evidence is when one juror told another juror that she thinks it's *P*. The other juror, thinking it's not-*P*, might judge her evaluation of the evidence as mistaken. In this scenario, we take the *P*-utterance by another juror as part of one's total evidence, which ultimately changes one's total evidence.<sup>8</sup> Additionally, Matheson (2011: p. 363) made the case that agents may differ not in their first-order evidence, but their higher-order evidence.<sup>9</sup> Matheson adds, "(Uniqueness) is not a claim restricted to one's first order evidence (or evidence directly pertaining to the dispute)". Higher-order evidence changes the body of total evidence. On some views about higher-order evidence, this may result in differing rational doxastic attitudes. This is not a problem for UNIQ because it only applies if both agents have the same body of total evidence.

### **2.3. Epistemic Standards**

The third condition I consider for UNIQ is that agents must possess the same epistemic standards whenever presented with the same body of total evidence. However, epistemic standards aren't clearly defined in the literature. To hopefully clear up some of the complications of the several views about epistemic standards, I employ a strategy here: First, we discuss about the different



plausible views of how one might think of epistemic standards. From those, I make an assumption for what I think is a stronger yet flexible formulation for epistemic standards. I will describe how this notion of epistemic standards will be used throughout the subsequent discussions in this paper.

White (2005) acknowledges that having different standards will yield different credences. But what are epistemic standards exactly? First, let me say something about two notions of epistemic standards that I do not include in the development of my conception of epistemic standards. The first notion of epistemic standards is used by Titelbaum and Kopec (2018) who takes epistemic standards as one's prior probability function.<sup>10</sup> We are excluding this from our discussion of epistemic standards as this is already satisfied by UNIQ condition (1). The second notion of epistemic standards found in the literature is concerned with one's cognitive goals, whether one values gaining true beliefs or avoiding false ones. First noted by Kelly (2013), we shall call these cognitive goals, Jamesian goals.<sup>11</sup> Although several developments of this notion of epistemic standards is found in the literature,<sup>12</sup> I exclude this notion from my conception of epistemic standards as these cognitive goals *directly* influence the outcomes that come out of one's update procedure.

What makes for a more interesting case, however, is the notion of epistemic standards developed as a set used as a function from evidence to doxastic states.<sup>13</sup> Schoenfield (2014) writes,

[W]e can just think of a set of standards as a function from bodies of evidence to doxastic states which the agent takes to be *truth conducive*. Roughly, this means that the agent has high confidence that forming opinions *using her standards will result in her having high confidence in truths and low confidence in falsehoods* (p. 199, *my emphasis on the second*).

Notice that the results of epistemic standards Schoenfield pertains to still point towards the Jamesian goals described earlier. But as I have already mentioned, I exclude Jamesian goals as epistemic standards; although it is possible that they can be members of the set of epistemic standards.<sup>14</sup> What I am interested in are the members of the set of epistemic standards. But since

this is not within the scope of my paper, I will not enumerate what the members of the set of epistemic standards are. In fact, take whichever epistemic norms relevant to the plausibility of the truth of Uniqueness and plug that into the set of epistemic standards.<sup>15</sup> Instead, what I offer in this paper is focused on two properties of that set that are readily available in the literature.

The two properties I discuss here are *precision* and *accuracy*.<sup>16</sup> I take it that precision is one of the driving motivations for Uniqueness.<sup>17</sup> A range of permissible (imprecise) credences could cover both disbelief and belief territory. This is commonly understood if we adopt a threshold that divides disbelief and belief accordingly. For example, if our threshold<sup>18</sup> for belief is .7 and the permissible range of credences after updating is .6–.8, it is unclear whether one must believe or disbelieve (see Elga 2010; White 2010). Elga (2010) argues that permissive (or imprecise) credences cannot explain the rational constraints of how one would accept or reject a certain hypothesis (or proposition). Therefore, credences must be precise.

Elga points out that being precise is not sufficient for Uniqueness. Some of the more recent papers suggest we must also be accurate on top of being precise (see Schultheis 2017, for example). Horowitz (2018) writes, “insofar as you are rational, you will adopt the credences that you take to be the most accurate response to your evidence.” Whatever the set of epistemic standards one may have, it should only be responding appropriately to what the evidence is able to offer. It does not mean that epistemic standard  $s$  given one’s evidence can pick out truths.<sup>19</sup> Thus, an epistemic standard is accurate only when it is *true* to the evidence.

For the purposes of this paper, I assume epistemic standards are one’s sensitivity to evidence. Having the same epistemic standards means that two agents perceive the incoming evidence the same way. Agents’ credences should be precise before, during, and after the update procedure and that agents maintain accuracy to what the evidence justifies, as well as its limitations.

### 3. Questions and Uniqueness

Given UNIQ, one might think that there's no room for variation on what agents can rationally believe in cases where (1)-(3) hold. However, I show that our inquiry allows for rational variation when judging whether a proposition is or is not the case even if we're given the same body of total evidence. I will thus argue that Uniqueness is false. First, I give an account of propositions which takes propositions to be sets of possible worlds. Following Yalcin (2018), I show how this account of propositions is sensitive to the questions we ask when updating our beliefs. Finally, the update procedure shows that agents can differ in what they can rationally believe.

#### 3.1. Propositions and possible worlds

The view I offer builds on Stalnaker's (1984) possible worlds model. Following Stalnaker (also 1976b), I give an account of propositions which primarily (*i*) takes propositions as objects of propositional attitudes, i.e. belief-states. Propositions are also (*ii*) primary bearers of truth and falsity. That is, propositions are functions from possible worlds to truth-values (p. 2). In this account of propositions, however, propositions (*iii*) do not have to be represented linguistically.

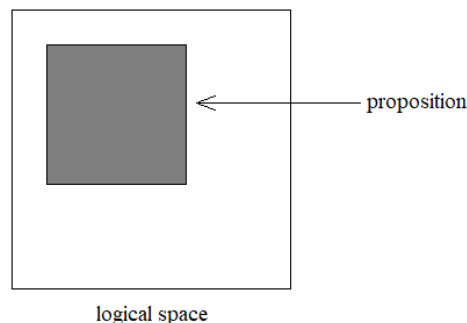
First, let me say more about (*iii*). Since the account of propositions primarily takes propositions as objects of propositional attitudes, propositions don't have to be linguistic. We can conceive of a creature that doesn't possess a language but still perform actions based on their interests. This reflects that such a creature has desires and beliefs, i.e. propositional attitudes. Thus, at the minimum, propositions are internally represented (p. 22; also Stalnaker 1976b). Therefore, in this view, propositions would not have to be conceptually structured (cf. Lewis 1980). This is in contrast with the other major accounts of propositions that view propositions as conceptually structured, i.e. Fregean *Thoughts* and Russellian *Propositions*. I will return to this exposition in §4.1.

With the account of propositions, we begin by positing that logical space encompasses all possible worlds. We understand possible worlds as “ways the world might have been” (also Stalnaker 1976a). Within logical space, propositions are conceived of as sets of possible worlds. Logical relations are defined as set-theoretic operations on sets of possible worlds.<sup>20</sup> For example,  $P$  entails  $Q$  iff  $P$  is a subset of  $Q$ , i.e., iff there is no possible world in which  $P$  is true but  $Q$  is not.

For Stalnaker, to say that a proposition is (epistemically) *necessary* means that it is true across all possible worlds within a domain. A domain is a set of possible worlds that an agent considers as potentially the actual world (see Figure 1). Saying that a world is actual is only indexical, in that it indexes the world one is currently in. The actual world, however, would only be one of the many possible worlds which an agent hasn’t precisely distinguished from the rest of the other possible worlds within a domain. Thus, it is important that an agent maintains a maximal proposition (the proposition that is *necessary*) that contains the actual world as one of its worlds. I will return to this shortly as this is important in how we update our beliefs.

Since the account of propositions discussed here takes propositions as objects of our propositional attitude of belief, the belief-state of an agent is modelled by the set of possible worlds that are compatible with the agent’s beliefs. Thus, belief-states are modelled by the maximal proposition, i.e. sets of possible worlds. Note that belief-states are different from credence functions described in the earlier section. I discuss how we incorporate credences in §5.

**Figure 1**



### 3.2. Belief Resolutions

In JURY, the proposition  $P$ , i.e. “SuSpect murdered VicTim”, is not entirely outside of the proposition that models the agents’ belief-states. Otherwise, the agents would already be certain that  $P$  is false and the members of the jury would presume SuSpect’s innocence before they even encounter the evidence. Thus, we begin with a proposition that is neutral about whether  $P$  is or is not the case.

Let’s call the proposition that models Pula’s belief-state and Lila’s belief-state – which we assume to be identical – at the start of the trial “ $R$ ”. The proposition  $R$  is the former set. Our account of propositions divides logical space into a subset of possible worlds where  $R$  is the case, worlds within the domain of our proposition (see Figure 1), and a subset where  $R$  is not the case, worlds outside the domain. To arrive at a verdict regarding  $P$ , evidence is presented to both Pula and Lila. Let’s call the conjunction of all the evidence presented “ $E$ ”. This new evidence rules out the possible worlds where  $E$  is not the case. Note that  $E$  should also be identical for both Pula and Lila to account for the conditions of UNIQ.

As we are working with qualitative belief-states (and not credences),<sup>21</sup> the new belief-state is simply the intersection of  $R$  and  $E$ . This intersection of  $R$  and  $E$ , however, is not sufficient to show how they are incorporated together that would result in belief-revision. This is because  $E$  is not an object of the propositional attitude of belief, but rather, of *acceptance*. Following Stalnaker (1984: p. 79–81), acceptance or acceptance-state is “a broader concept than belief; it is a generic propositional attitude concept with such notions as presupposing, presuming, postulating, positing, assuming, and *supposing as well as believing falling under it*” (*my emphasis*). To add, accepting  $E$  is only provisional. We may posit that it is true for a moment. Accepting  $E$  does not imply that one believes  $E$ . So far, I have not said anything about how these two acceptance states, positing  $E$  and believing  $R$ , fuse together such that this results in belief-revision. It is also a question which

portions of  $E$ , as it is only posited, is considered by the agent as *actually* true. Inquiry is the tool that accomplishes that, using questions to bind two different acceptance states that results in belief-revision. Inquiry reopens previous issues to investigation which could potentially revise the landscape of the current belief-state.

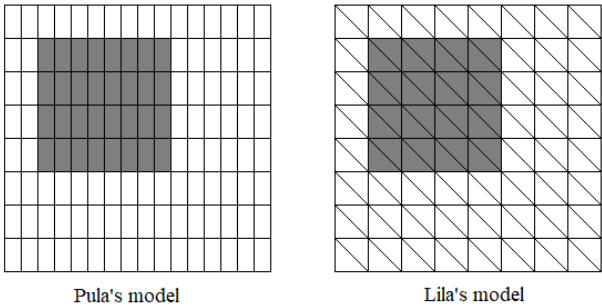
Questions (i.e. what guides inquiry), unlike propositions, do not correspond to a (possible) state of the world. They do not possess truth conditions like propositions do. Instead, a question elicits information (i.e. evidence) pertaining to its contents.<sup>22</sup> Intuitively, questions are tools for asking someone something in a conversation. In this model, they serve as tools (hence practical) that divide logical space into fragments, corresponding to possible answers. Each fragment, an answer to a question, is also considered a proposition except they are not maximal. Thus, an agent's attitude towards a fragment would be different from an attitude towards the maximal proposition.

How logical space is divided depends on the questions one is trying to answer. This is what Yalcin (2018) refers to as *modal resolution* or simply *resolution*. The application of resolution to logical space is Yalcin's proposed treatment to the problem of logical omniscience, which is a problem for the standard possible worlds model (see Figure 1). The problem (or problems) comes in various forms. I will not enumerate all of them here but to provide a sense of how the problem goes, let me say a bit about it. The problem of logical omniscience is a problem of deduction. As one believes  $R$ , and  $R$  entails proposition  $x$ , then one also believes  $x$ . This can be easily multiplied in many ways. For example, since  $R$  is a set of possible worlds, an agent believes all propositions entailed by  $R$  in all those worlds, which includes all truths of logic. Resolution, as produced by the various questions one poses, could bring out specific contents that  $R$  entails. Certain propositions are, as it were, invisible to the agent because their boundaries in logical space don't coincide with the agent's resolution.

Notice that this is a different sense of practical than the one discussed in the previous section. The sense of practical I am concerned here is only in the way we formulate questions that divide logical space. Whereas, others have been concerned with *decision-making*, whether one should believe or not based on one’s two contrasting Jamesian goals. I’ll keep coming back to this thought throughout the paper.

The resolutions of two rational agents may differ, for it is possible that they differ in how they pursue knowledge, i.e., in which questions they are trying to answer. This might pose a worry as it seems counterintuitive that our jury members, Pula and Lila, would be pursuing different questions. To streamline the discussion, I’ll set this aside and return to it in §4. For now, what I want to show is that partitioning logical space is thus relativized to one’s inquiry (see Figure 2). The resolution can be finer or coarser depending on how specific the questions are. For demonstration purposes, however, we modelled the resolutions of Pula and Lila with an equal number of *cells*, or fragments, but vary on how logical space is partitioned which reflects the variation on the kinds of questions they might have.

**Figure 2**



In comparison with the picture in Figure 1, a cell (or fragment of logical space) is not maximally specific. As I will argue in the next section, once we take resolutions into account, we can see why and how UNIQ fails. The key is that an agent whose doxastic state has a certain resolution must treat all possible worlds within a cell of their resolution in the same way.

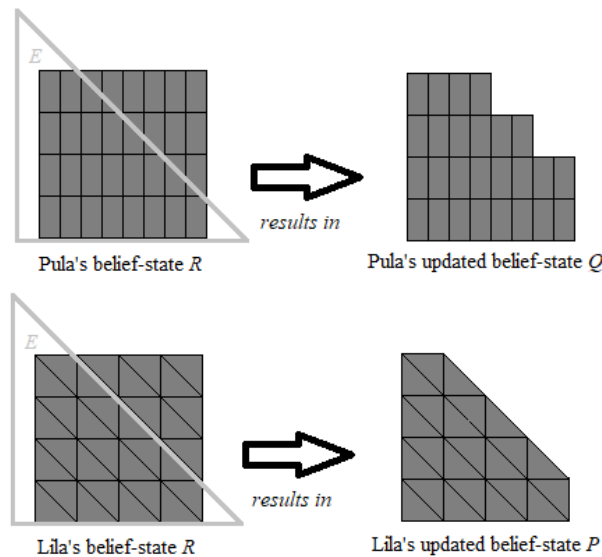
### 3.3. Permissive Picture

I take it that we are actively seeking knowledge. Our senses gather information, which we use to locate ourselves accurately in the space of all possible worlds. To quote Stalnaker:

To learn something, to acquire information, is to rule out possibilities. To understand the information conveyed in a communication is to know what possibilities would be excluded by its truth (1984: 85).

But given that we inquire differently, the ways that we fit answers to questions lead to variation on what we rationally believe. In JURY, Pula might have questions that the presented evidence will not be able to answer. Whereas for Lila, those questions are considered unimportant. Given new evidence  $E$ , both Pula and Lila eliminate all possible worlds in minimal partitions that are not in the intersection of  $R$  and  $E$  to form their new doxastic states. If the evidence only rules out some but not all possible worlds within a cell, then that cell is retained as part of the maximal proposition. Figure 3 illustrates this update procedure.

**Figure 3**



Let me recap some of what I have said in §2 to fully explain what's going on in Figure 3.

We have said that agents must begin with the same priors, which is UNIQ condition (1). Instances



of old evidence would have to be the same. In Figure 3, this means they begin with the same maximal proposition, which is  $R$ , as both of our agents' old evidence had ruled out the same worlds. We also observe that our agents have the same body of evidence, UNIQ condition (2), which is  $E$  in our picture. UNIQ condition (3) is characterized by our evidence carved out in the same form and intersecting at the same parts of our maximal proposition. The parts of our evidence that are true coincides within the boundaries of our maximal proposition, and those that are false are outside the maximal proposition. Recall that in our account of propositions, a proposition is also the bearer of truth and falsity. In Figure 3, we observe that given UNIQ, Pula and Lila differ in their resulting maximal propositions, thus, having different belief-states.

*We can now see how UNIQ fails in our formal model.* Pula and Lila start with the same belief-states, they receive the same evidence, but they end up with different belief-states. This happens because the belief-states of Pula and Lila have different resolutions.

Comparing the belief-states of Pula and Lila, we see that  $P$  entails  $Q$  because  $P$  is a subset of  $Q$ , but  $Q$  does not entail  $P$ . While the evidence cuts perfectly to Lila's resolution, Pula has not ruled out some possibilities that she would need to rule out in order to believe  $P$ . As stated earlier, it is unclear what Feldman (2007) considers as competing sets of propositions. In his formulation of Uniqueness, he provides an example that at most "one theory out of bunch of exclusive alternatives" will be rationally justified by  $E$ . Notice that my view allows for some overlap of worlds between two different, and therefore non-exclusive, propositions. Where there is a kind of permissivism that endorses exclusive propositions, holding doxastic attitudes towards  $P$  and any other proposition that doesn't overlap with the worlds of  $P$ , this is not the view I endorse here. If Pula and Lila both watched a surveillance video where they saw SuSpect stabbing VicTim, and they come to believe two different exclusive propositions, then at least one of them is irrational.

This is why it is important to distinguish *pot-P* from *not-P*; and *not-P* is just one instance of a proposition that doesn't overlap with *P*. My view rejects Feldman's general statement, however.

In my view, we could at least account for situations wherein SuSpect stabbed VicTim as part of one's self-defence or a story wherein VicTim provoked SuSpect into committing the crime. My view only states that there are other equally rational propositions to hold given the evidence. It doesn't say that *any* proposition is rational. If Pula is asked whether she believes *P*, she would say that she doesn't believe *P*. She doesn't necessarily believe its negation either. Yet one might assert, from evaluating Pula's rejection of *P*, that she believes *not-P*. However, this only shows the inadequacy of utterances like "I don't believe *P*" which is easily confused with "I believe *not-P*", especially in the context of JURY, in expressing what Pula actually believes, i.e. *Q*. This also further supports the view that propositions shouldn't be taken as necessarily linguistic.

Some additional remarks before moving to the next section. As I have noted earlier in §3.1, we would want a maximal proposition that potentially contains the actual world. I have also noted that if the evidence rules out some but not all possible worlds in a cell, then that cell is retained as part of the maximal proposition. As we see in our formal picture, this is evident in Pula's updated belief-state. For Pula to have not ruled out some possibilities that she would need to rule out in order to believe *P* means there remain some *doubts* that are not settled by the evidence. White suggests that "...among the possible worlds in which I respond to the same evidence in a perfectly rational manner, there are some in which I'm sure he's guilty and others in which I have doubts" and argues that we must "take charge" of "some factor other than the evidence" or the "ability to rationally respond to it" when making convictions (2005: p. 454). I take it that for White, he thinks there is a *unique* way of how we must "take charge" to yield the same doxastic attitudes. This

seems to point towards a Jamesian conception of non-evidential factors described earlier, which I have differentiated from my view. Instead, contra-James, I adopt the following evidential principle:

**Clifford's Principle:** It is wrong always, everywhere, and for any one, to believe anything upon insufficient evidence (Clifford 1877: p. 295).

We do not just simply believe and rule out worlds without sufficient evidence. To rule out a cell that is only *partially* ruled out is to possibly rule out the actual world. This shows that the doxastic attitudes one has remain consistent with a proposition's evidential support. Given the rules that guide one's inquiry, which we will now turn to in §4, we make further developments to the current model that acknowledges a doxastic attitude's sensitivity to inquiry, or questions, and how evidence would fit in as answers to those questions.

#### **4. Norms of Inquiry**

In this section, I argue that we must give full considerations to how inquiry influences what we take as the rational doxastic state given a body of total evidence. Epistemic rationality possesses components that are inherently practical, i.e. inquiry. This is because inquiry is a practical endeavor as its purpose is concerned with the acquisition of knowledge. To conceive the connection between inquiry and what we consider as epistemic commonly understood, I develop a taxonomy of how we might think of inquiry. Drawing from the works of Friedman (2013, 2017, 2018, 2019, ms), I introduce three types of inquiry: *passive*, *proactive*, and *reactive*. These types of inquiry allow me to develop claims based on how a proponent of Uniqueness might respond to my view. These claims will in turn demonstrate how we might model resolutions in logical space.

##### **4.1. Fine-grained resolutions**

In this subsection, I introduce what I call *passive inquiry* and the motivations behind the classification. With this classification, two problems emerge: (i) passive inquiry suggests that we have fine-

grained (maximal) resolutions and (ii), which follows from (i), that the ideal epistemic subjects Uniqueness is concerned with are those that have maximally fine-grained resolutions. Responding to these problems, specifically (i), provides clarity about this classification. Moreover, responding to (ii) allows for the development of my claim that the move to resolutions is an attempt to resolve the problem of logical omniscience. Adopting maximally fine-grained resolutions loses all the benefits of having resolutions.

Returning to the discussion about propositions in the previous section, like propositions, questions need not be represented by a linguistic sentence. Although this might seem counter-intuitive at first, I think we could conceive of questions as something beyond sentences. The attitude of belief has proposition(s) as its object. The same goes for questions. If we think of questions similarly as propositions, except that they elicit some information, we could also think that they are objects of some attitude. This attitude is what Friedman (2013) calls *Interrogative Attitudes*, which include attitudes such as wondering and curiosity. We inquire about the actual world to narrow down on which possible world *is* the actual world from the current set of possible worlds. This type of inquiry related to general interrogative attitudes is what I call passive inquiry.

This classification connects inquiry with purported epistemic norms epistemologists write about, e.g. Uniqueness. Some views suggest that when it comes to knowledge, epistemic rationality does not have any practical components.<sup>23</sup> This strong view would seem to reject all types of action, including mental actions, as part of one's epistemic considerations. But, as I show, we could still conceive of a practical component that is relevant to what we might think epistemic rationality is. Passive inquiry is inquiry that extracts information from the external world into one's acceptance (mental) states; and it functions subconsciously.

Let us suppose that we are at least subconsciously inquiring about which possible world, from a set of possible worlds, is the actual world. However, this implies that we have fine-grained (maximal) resolutions, which is the first problem (*i*) this view encounters. While I do think that passive inquiry is something we have by default (though I am not deeply committed to it), it is not the type of inquiry involved when revising beliefs. Passive inquiry is more primitive. It is what instantiates the acquisition of information from the external world. More concretely, our senses acquire information without *willing* to acquire such information. One could think of it as the default configuration our senses have as they function automatically. This information gathered by the senses is not automatically incorporated into one's belief-state, however. One doesn't simply believe optical illusions, for example. Therefore, passive inquiry only appeals to some of our predispositions. I would not want to say more about whether we consider these predispositions as biological or linguistic, as this opens up issues that I don't want to get into in this paper.<sup>24</sup> What I want to say about passive inquiry, however, is that it is inquiry *used* to extract data from the external world into acceptance states.

A proponent of Uniqueness might suggest (*ii*), that Uniqueness is only concerned with ideal epistemic subjects who are able to update their beliefs with maximally fine-grained resolutions, i.e. those who divide logical space using passive inquiry. However, this treats logical space as if there is no resolution at all. This bypasses why we would have resolutions in the first place. The move from the standard possible worlds model to a *fragmented possible worlds model*, as Yalcin (2018) calls it, is an attempt to solve the problem of logical omniscience. This type of inquiry does not fix, or sidestep from, the problem of logical omniscience discussed in §3.2 if used more than what I have specified in this subsection. Hence, what is required to update our beliefs, which is what we're really interested in, is inquiry of a certain type.

## 4.2. Aims of Inquiry

The second type of inquiry, *proactive inquiry*, is a more intuitive type of inquiry. We find instances of proactive inquiry when an agent is conducting an *active* investigation about  $\varphi$ . In JURY, it is inquiring about  $P$ , whether SuSuspect murdered VicTim. A proponent of Uniqueness might raise a worry that if they are both trying to conduct a specific investigation, i.e. whether  $P$ , then it should be the case that their resolutions will ultimately be the same. However, I claim that rationality doesn't require a unique resolution. Rationality only requires that one models their resolution relevant to the *subject matter*. In this subsection, I demonstrate how proactive inquiry plays a role in how logical space is divided, but does not suffice for an account of how beliefs are updated.

If we have an interest in knowing about  $P$ , then it seems that we ought to take the best means to know  $P$ . Pula and Lila, serving as jurors, will *eo ipso* have this particular question in mind. With one question, whether SuSuspect is guilty or not, we can imagine logical space divided in coarse partitions, two to be exact:  $P$  and not- $P$ . The total body of evidence is far more complex though. It does not directly answer the question whether  $P$  or not- $P$ . Instead, it answers in fragments, in multiple questions that are related to the main question, i.e. whether  $P$ .

I take it that some questions are good questions while others are not. With a set of (good) questions, we can divide logical space into finer partitions. But what counts as good questions? Pérez Carballo (2018) argues that a good question has higher epistemic utility. The more true propositions we gain from the questions we ask, the better. These questions maximize the epistemic value that can be achieved by posing them. A good question, for Pérez Carballo, depends on a question's conduciveness to accuracy and on how its answers could provide the best explanations.

One can argue that adopting a set of questions based on that set's epistemic utility should be the same for both agents and save Uniqueness this way. A proponent of Uniqueness might

suggest that both agents should have an idea which questions yield higher epistemic utility; and model their resolutions in accordance to that. However, consider the following case:

**YAMS:** SuSpect and VicTim both worked at the only market available to where Pula and Lila live. A testimony states that VicTim was murdered because VicTim tried to warn their patrons that some disease infested the yams sold in the market. Pula and Lila did not know this information about yams before the trial and yams were staple to their diet.

Three closely related points emerge from YAMS. First, because Pula and Lila are concerned about what could potentially endanger their lives, it seems that they should be able to take that information and incorporate it into their belief-state, stop consuming yams, and look for alternatives. Since they do not have YAMS-related questions in their resolutions as they modelled their resolutions based on epistemic utility, it is a puzzle how they might incorporate this information. I provide a solution to this problem in §4.3.

The other two points I want to bring up in this subsection are: *(i)* having the same *good* questions is not required for rationality and *(ii)* the supposed epistemic utility of questions is not sufficient basis for how we must partition logical space. I will address both of these by providing an account of what would count as good questions that rationality requires. Before I do that, let me cause some more trouble to those who might suggest that we should model our resolutions based on the epistemic utility of questions.

Let's suppose that it is important for Pula and Lila to know about yams. They'd avoid a trip to the doctor for one. Suppose too that in the beginning of the trial, they found out that they would acquire a lot more information about yams than they would about who murdered VicTim. It would not be right to model their resolutions based on YAMS. First, this requirement assumes

that an agent already has ideas on what she might encounter as evidence.<sup>25</sup> Second, they will be modelling their resolutions based on something that is not required of them as jurors.

Instead, the questions one asks are those based on rules relevant to the *subject matter*. These rules govern which questions are reasonable to ask that will model logical space. It provides the context of the resolution, namely, the guilt of SuSpect. In Yalcin (2018), questions cutting through logical space *foregrounds* propositions. They would be those questions that pertain directly to  $P$ —for example, whether SuSpect’s fingerprints are the ones found in the murder weapon. *Background* questions, on the other hand, do not cut through logical space and are implicit. They are some of the questions that pertain to YAMS. Pula and Lila can still acquire information about yams, but they are not the questions that pertain directly to our subject matter.<sup>26</sup>

What would be the bearer of these rules then? They would be those rules enforced relevant to our social practice.<sup>27</sup> The jurors in JURY are given constraints such as sitting in the courtroom throughout the course of the trial. This is what I’ll call *primary rules*. The primary rules are determined by our social practices. These rules guide us on how we might conduct ourselves in inquiry. Whereas for (say) a detective, the constraints in JURY do not apply, even though jurors and detectives have the same proactive questions, i.e. whether SuSpect murdered VicTim. Primary rules, along with the proactive question, provide context of how we might divide logical space.

Earlier we said that proactive inquiry would divide logical space into two partitions: one part for  $P$  and one part for not- $P$ . But as we have noted, evidence is far more complex than whether  $P$  or not- $P$ , unless e.g. SuSpect admits to the crime. Yet even then, we would not take SuSpect’s admittance to the crime as the determining evidence for SuSpect’s conviction. Some parts of the total evidence could still point otherwise. So far, we have only set up rules that govern how trials



usually go (at least in certain societies) and how we conduct ourselves given these rules. None is said about the rules that govern how resolutions with fine partitions are modelled.

To accommodate complex evidence like that in JURY, we divide logical space into finer partitions. The primary rules, however, do not accomplish this. Instead, *secondary rules* are those rules required here. Secondary rules follow from and are justified by primary rules. They provide *context* to which *actions* (or moves) are permissible. These include the type of questions agents may ask when modelling their resolutions, which information is foregrounded, and which information is backgrounded.

Given what I have said earlier, modelling resolutions based on questions that maximize epistemic utility is not sufficient, and I have provided an alternative. I take it that a responsible inquirer, in cases like JURY, would only inquire based on one's acquired evidence, along with the primary and secondary rules. The next two subsections hope to drive this point home.

### **4.3. Reactive Inquiry**

A tension ensues if we are limited to passive and proactive inquiry (Friedman ms.). Passive inquiry draws out all and every information available even those that are (probably) mundane and irrelevant to our interests. Proactive inquiry would not be able to accommodate information from cases like YAMS. To resolve this tension, I introduce a third type of inquiry, *reactive inquiry*. Aside from proactive inquiry, reactive inquiry models one's resolution based on acquired evidence. This also illuminates how the rules, as discussed in §4.2, are applied in our formal model.

Let me articulate the tension a bit more, or what Friedman calls the 'zetetic dilemma'. To help me with this exposition, I relate it to an analogy used by White (2005) and Schoenfield (2018) about popping rationality pills. This is not to deploy their use of the analogy directly, but to give a clear sense of the dilemma Friedman presents. The two horns of the dilemma are as follows:

**Overdose:** We are not actively engaged in trying to know  $\psi$ , yet may end up knowing about  $\psi$  when the opportunity presents itself to know  $\psi$ .

**Underdose:** We are actively engaged in trying to know  $\phi$  but there is information other than  $\phi$  that is available.

We find instances of Underdose when an agent is limited to proactive inquiry. In conducting an *active* investigation about  $\phi$ , one is presented an opportunity to pass judgment on some information other than  $\phi$  (Friedman 2019). In JURY, this is best exemplified by the YAMS case. Pula and Lila come to know that it is unsafe for them to consume the yams sold in the local market. If they are focused on knowing  $\phi$ , and are limited to proactive inquiry, then it is puzzling how they can come to know this other seemingly important information. Focusing on  $\phi$ , and only  $\phi$ , is adhering to the suboptimal dosage the available information could bring into gaining knowledge. Thus, proactive inquiry cannot explain how we are able to acquire other pertinent information outside the focus of our investigation.

The alternative might suggest that we don't have to set desired ends to know something. One's passive inquiry is a more than sufficient means to update one's beliefs. But as said in §4.1, this commits us to logical omniscience as this divides logical space with cells equivalent to every single possible world. This presents the other horn of the dilemma, Overdose. An overwhelming amount of information available around us makes it seem impossible to acquire all of it at once; moreover, the same applies to all the other propositions that would follow from acquiring such information. Recall our discussion on logical omniscience.<sup>28</sup> If one is concerned about  $\phi$ , it seems justified to say that one ought to take the best means in knowing  $\phi$ . This might be because we are trying to avoid cluttering our minds with trivialities (or junk) in the process (Friedman 2018; cf. Harman 1986). In JURY, it is trying to figure out whether SuSpect murdered VicTim and ignoring

other (possibly mundane) information. However, this puts constraints on what we can know based *only* on what we *aim* to know, which brings us back to the first horn of the dilemma, Underdose.

Thus, I must add, which restates my point in §3.2, that we update our belief-states by incorporating evidence using another type of inquiry, which I call reactive inquiry. Following Friedman (2017), once we acquire information about  $\psi$ , we open (or reopen) a question to update our beliefs. Thus, we use this type of inquiry *pro re nata*. This makes formulating our questions sensitive to incoming evidence. The specific questions we pose model our resolutions in light of new evidence. Questions and evidence, which serve as answers, are then inseparable.

Reactive inquiry works as follows: When a witness testifies to the stand, whatever the witness says in her testimony is added as a member of the set  $E$  in our acceptance-state. However, this can only be incorporated to our belief-state if we have questions *sensitive* to that witness's testimony. Such questions may include: "Does the witness have other motives for stating such-and-such testimony?", "Where was the witness when the crime was committed?", or "Is the witness accurately stating what she had witnessed?". These questions can be multiplied into very many ways depending on the person's preference on how fine-grained their resolutions should be. But as stated in §4.2, there are rules that govern how we model the resolutions. The relevance of that piece of evidence to the total evidence will also dictate how fine-grained the resolutions need to be. For example, if the witness is only stating a hearsay, then it might be irrational to get too caught up<sup>29</sup> (dividing the resolution finely) on what the witness has to say. Unless of course, we have good reasons to do so, e.g., the hearsay was from SuSpect.

In cases like YAMS, or even more mundane ones, the information we gain that does not necessarily pertain to the subject matter are backgrounded. By *reacting* to that information adequately, it creates *implicit* partitions that would not necessarily reflect how the resolution is

modelled. Hence, this would not affect whether one would end up believing  $P$ , unless it is an actual criterion relevant to  $P$ . Backgrounded information is incorporated into the belief-state, at least implicitly, and would (probably) be available for later access.<sup>30</sup>

#### 4.4. Inquiry and Deduction

As stated at the end of §4.2, a responsible inquirer would ask questions based on the presented evidence. A proponent of Uniqueness might say: “Since agents have the same evidence and are using reactive inquiry, then it seems that they should be *reacting* the same way towards that evidence. The questions they will have will also be the same. Thus, Uniqueness can still be saved.” I offer my response here. This also clarifies the relationship between the broader acceptance-state, belief-state, and inquiry. I emphasize the claim that the normative strengths Uniqueness has cannot be applied to inquiry as inquiry is practical.

I have ruled out epistemic utility as the basis for our questions earlier, but reactive inquiry was not introduced beforehand. Now that we have reactive inquiry on the table as a classification of inquiry, one might suggest that epistemic utility theory could model reactive inquiry. However, under epistemic utility theory, our *reactive* questions would be those questions generated from the body of evidence to maximize epistemic utility. Thus, the answers are guaranteed and leave no room for doubt, which seems like confirmation bias. A responsible inquirer would not base their questions on whether it is answerable or on the fact that the answer is already available to them.

Instead, to respond to the worry, let me recap the discussion about the relationship between acceptance-state, belief-state, and inquiry. Acceptance-states, which include belief-states, potentially have truth-values. Recall that belief-states are different from other acceptance-states as they are objects of beliefs. To accept the evidence does not mean that it is believed. Stalnaker states that “[t]o accept a proposition is to treat it as a true proposition in one way or another—to ignore,

for the moment at least, the possibility that it is false” (1984: p. 79). We can say that accepting the evidence could mean we (provisionally) presuppose the evidence is true, i.e. assigning 1 when working with Bayesian conditionalization. As objects of an attitude, the attitude can “be *correct* whenever the proposition is true... Correct beliefs, assumptions, suppositions and presumptions are beliefs, assumptions, suppositions and presumptions the contents of which are true” (Stalnaker 1984: p. 80, *his emphasis*). When a question is posed, on the other hand, it is not correct or incorrect; whereas there are *true* or *possibly true* propositions, there are only *good* questions.

Inquiry, especially reactive inquiry, would allow us to conjoin two different acceptance-states, which for our interests here causes belief-revision. Inquiry would not have a truth-value. It only reflects our wants and desires. Thus, inferring wants and desires from states does not occur deductively. What is required is that they follow the primary and secondary rules discussed in the previous subsections. Proponents of Uniqueness would have to say more if they assert that our questions should also be the same. They would have to say that our desires and wants would also have to be the same. This is possible, but I doubt that it is defensible. Thus far, Uniqueness fails.

## 5. Incorporating Credences

The ideas just presented may seem to be a departure from a Bayesian framework that is frequently used in the debate about Uniqueness. What role do credences play in this picture? I illustrate how we can incorporate credences in this section.

### 5.1. On Bayes

First, it is required that rational credences follow the axioms of probability calculus. The three axioms (Kolmogorov 1950) are as follows:

**Non-Negativity:** For any proposition  $\varphi$ ,  $\Pr(\varphi) \geq 0$ .

**Normality:** For any logical truth  $T$ ,  $\Pr(T) = 1$ .

**Finite Additivity:** For any mutually exclusive propositions  $\varphi$  and E,

$$\Pr(\varphi \vee E) = \Pr(\varphi) + \Pr(E).$$

Pr stands for the probability function. Bayesians also follow another normative constraint on how agents' credences change over time given evidence. This constraint is usually expressed in Bayesian conditionalization. It is as follows:

$$\textbf{Bayesian Conditionalization (BC):} \quad \text{Post}(\varphi) = \text{Prior}(\varphi|E) = \frac{\text{Prior}(\varphi \wedge E)}{\text{Prior}(E)}.$$

$\varphi$  is any proposition and E is our evidence. Also, note that we are tracking one's prior and posterior probabilities indicated as Prior and Post respectively.

In incorporating the formal picture with Bayesian Conditionalization, each cell in a resolution is taken to be a subset of the maximal proposition (which models the agent's belief state). Thus,  $\varphi = (\varphi_{c1}, \varphi_{c2}, \varphi_{c3}, \dots, \varphi_{cn})$ , where  $c$  represents a cell within the maximal proposition. The credence distribution of the maximal proposition, which is equal to 1, is distributed to each cell. They are not required to be distributed equally. One cell can, for example, have .95 while the rest of the cells would share the remaining 0.05. This shows that there is higher credence in worlds within a particular cell containing the actual world in comparison to worlds outside that cell.

In what follows, I show that we are able to track the changes in the credence distribution of each cell once we update our maximal proposition. Since we normalize the maximal proposition to 1 given Normality, we know that the sum of all cells within the maximal proposition is equivalent to 1, given Finite Additivity. We begin with invariant odds, from which we can also derive the formula for classical Bayesian Conditionalization:  $\frac{\text{Post}(\varphi)}{\text{Post}(E)} = \frac{\text{Prior}(\varphi)}{\text{Prior}(E)}$ . Since parts of the evidence outside the maximal proposition are assigned with a value of 0, we substitute  $\text{Prior}(E)$

with  $\text{Prior}(\varphi_{c1}, \varphi_{c2}, \varphi_{c3}, \dots, \varphi_{cn})$  where  $n$  is the number of remaining cells after the evidence ruled out other cells. From that, we are able to derive:

$$\text{Cell Distribution (CD): } \text{Post}(\varphi) = \frac{\text{Prior}(\varphi)}{\sum_{i=1}^n (\text{Prior}(\varphi_i))}$$

To see that this updating rule is intuitively correct, notice that it agrees with Bayesian Conditionalization if the evidence cuts exactly along the lines of the agent's resolution, where we consider only the propositions "visible" for the agent, i.e. only the cells of the agent's distribution. In other words, the following holds:

**Proposition:** If the boundary of evidence  $E$  coincides with the boundary of the resolution of the agent, then, for every proposition  $\varphi$  that corresponds exactly to a cell of the resolution, updating by Bayesian Conditionalization and updating by Cell Distribution yield the same result, i.e.  $(\text{BC})\text{Post}(\varphi) = (\text{CD})\text{Post}(\varphi)$ .

**Proof:** Assume that the boundary of  $E$  coincides with the boundary of  $\varphi$ . It suffices to show

$$\text{that } \text{Prior}(\varphi|E) = \frac{\text{Prior}(\varphi)}{\sum_{i=1}^n (\text{Prior}(\varphi_i))}. \text{ Now, } \text{Prior}(E) = \sum_{i=1}^n (\text{Prior}(\varphi_i)) \text{ and}$$

$\text{Prior}(\varphi) = \text{Prior}(\varphi \wedge E)$ . By definition of conditional probability,

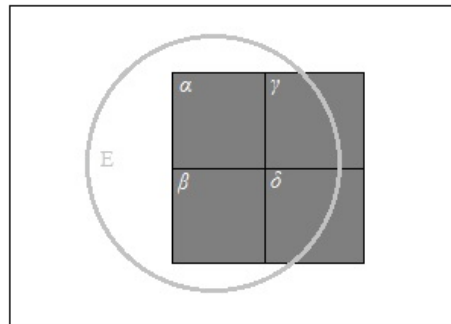
$$\text{Prior}(\varphi|E) = \frac{\text{Prior}(\varphi \wedge E)}{\text{Prior}(E)}. \text{ So, } \text{Prior}(\varphi|E) = \frac{\text{Prior}(\varphi)}{\text{Prior}(E)} = \frac{\text{Prior}(\varphi)}{\sum_{i=1}^n (\text{Prior}(\varphi_i))}.$$

## 5.2. Insufficient Evidence

Lastly, in this subsection, I show how we might incorporate credences with resolutions whose cells are only partially ruled out. There are two main possible ways to accomplish this: (1) adopting Jeffrey conditionalization or (2) using CD as discussed in § 5.1. (1) has problems, however, and therefore my view prefers (2).

One problem raised when using Bayesian conditionalization is that one must assign a credence of 1 to one's evidence, which means that one is certain the evidence is true. However, it seems that we are often uncertain whether the evidence is true or false. In our picture, since the evidence does not cut perfectly to one's resolutions, e.g. that of Pula, we assume that our evidence doesn't rule out certain worlds completely; rather deems worlds outside of the proposition that represents the evidence less likely. Let us consider Figure 4, which is a simpler representation of a case wherein evidence E does not cut perfectly through the resolution. Without resolutions, the evidence E would simply give the worlds inside the circle labelled "E" a boost in credence relative to all the worlds outside of the circle. But how should this work for doxastic states that are structured by resolutions?

**Figure 4**



Uncertainty regarding the evidence has been the motivation for adopting Jeffrey conditionalization. Let's try to adopt Jeffrey conditionalization in trying to solve the current problem, i.e. incorporating credences with resolutions. The formula for Jeffrey conditionalization is as follows:

**Jeffrey conditionalization:**  $\text{Post}(\varphi) = \text{Prior}(\varphi|E) \text{Post}(E) + \text{Prior}(\varphi|\neg E) \text{Post}(\neg E)$



We assign a value to  $E$  between 1 and 0. This represents the uncertainty of  $E$ . As the worlds outside of our maximal proposition have credence 0, the value of  $E$  will equal the value of the intersection of  $E$  and our maximal proposition.

We now try to apply Jeffrey conditionalization to our structured maximal proposition  $\varphi$ , the superset of  $\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\delta$  in Figure 4. As we normalize to 1 per Normality, the value assigned to  $\neg E$  will be  $(1 - E)$ . So, the sum of all posterior credences in  $\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\delta$  is 1. We can apply Jeffrey conditionalization to cells  $\alpha$  and  $\beta$ . More precisely, since  $\text{Prior}(\alpha|\neg E) = 0$ , the second part of Jeffrey's formula will be 0 and we get  $\text{Post}(\alpha) = \text{Prior}(\alpha|E) \text{Post}(E)$ . The same holds for  $\beta$ .

What about cells  $\gamma$  and  $\delta$ ? We can indeed arrive at a credence distribution even for cells that are only partially within our evidence through Jeffrey conditionalization. However, to do so, we need a lot of additional information about the relevant probability distribution. Basically, we would have to update by Jeffrey conditionalization within cells  $\gamma$  and  $\delta$  and then average the result for the whole cell to derive the posterior credence for  $\gamma$  and  $\delta$ . In other words, to determine the credence distribution after updating, the agent would have to us information about the relevant probability distribution within individual cells, which goes against the spirit of introducing resolutions. The agent whose evidence doesn't cut perfectly to her resolution is not able to see which worlds are ruled out by the evidence within a cell. Assuming the agent sees those worlds where the evidence cuts through nullifies the resolution. Therefore, applying Jeffrey conditionalization to cases where the cells are only partially ruled out is not a viable option.

Let me suggest an alternative picture of the uncertainty of evidence. Recall our discussion about acceptance-states and belief-states. It is unclear why it would be the case that accepting the evidence would result in a valuation that is between 0 and 1. If we are presupposing the evidence is true for it to be useful, i.e. when revising our beliefs, then we presuppose its value is 1. If we

*deny* the evidence, or that we do not accept it, we do not consider it for belief-revision. In my view, uncertainty is not necessarily found in the evidence. Rather, the only attitudes we assign a particular evidence would be either acceptance or denial (see endnote 29). How we account for uncertainty, however, is in the inadequacy of evidence to answer our respective questions. *Evidence is evidence*. Our evidence might not necessarily be evidence in support for  $P$  if we cannot make sense of it, but it remains evidence for something else. Thus, it will be wrong to assign a value less than 1 to our evidence if we presuppose its truth to update our beliefs.

The second possible way to calculate for the credence distribution is to apply the formula (CD) I proposed earlier. But how exactly can it be applied? The first option is to apply CD with two propositions: the maximal proposition  $\varphi$  (or  $n=4$ ) and an assumed proposition,  $n=2$ . In  $n=2$ , we assume that cells *almost* ruled out by the evidence were actually ruled out, namely the set of  $\alpha$  and  $\beta$ . We conjoin their respective results in the form of a range of credences with lower and higher values. We apply CD with  $n=2$  for the higher value and CD with  $n=4$  for the lower value. Under this option, every credence between those ranges is considered rational. This shows that E cuts in between cells  $\gamma$  and  $\delta$ . However, adopting this leads to imprecision in our credence values. Given this, let's rule that option out. Another option is to take the average of the results of CD with  $n=2$  and CD with  $n=4$  to arrive at a credence distribution. However, assuming a set with  $\alpha$  and  $\beta$  as elements is erroneous. The agent does not possess evidence by which she will be able to rule out specific worlds to even consider using CD with  $n=2$ .

Thus far, I have ruled out a couple of options on how to use CD. Here is a third option: we apply CD but choose between  $n=2$  and  $n=4$ . This reflects which Jamesian goals one values more. We settle for  $n=4$  because we value avoiding errors. We settle for  $n=2$  because it might be important to gain truths by losing some of the worlds wherein we have doubts. However, the latter

is problematic, not only because assuming  $n=2$  is problematic, but also, because it's unclear we gain additional truths this way. Moreover, as I have already discussed in several parts of this paper, I am differentiating my view from a Jamesian conception of non-evidential factors. I am concerned with preserving worlds that are potentially the actual world. Therefore, (iii) also fails.

Instead, in figuring out the credence distribution when faced with uncertainty, I suggest using CD and adopting Clifford's Principle. Since the agent does not know whether the evidence doesn't cut perfectly to her resolution, she would just take it that the evidence does so anyway. One worry is that the agent is no longer accurate on how she distributes her credence to the other cells that aren't in question, i.e. cells  $\alpha$  and  $\beta$ , since the credences of  $\alpha$  and  $\beta$  will be redistributed to the whole set. This is not a problem at all for our model because it simply points out the limitation of agents. I agree that the agent is *less* accurate given that the agent does not capture the credence she would have if it was visible to her where the evidence cuts through. Nonetheless, the agent *remains* accurate on the values of each cell relative to inquiry and *true* to the limitations of the evidence in answering an agent's respective questions. What we're trying to present here are the values the agent holds given her cognitive limitations. If one still seeks an argument for this, the remarks about logical omniscience, I think, should suffice.

## 6. Conclusion

Isn't it the case that diversity in what we pursue is good and that way we can defer to our peers that they'll do what they can in pursuance of truth? A proponent of Uniqueness might agree with this in a coarse-grained way, i.e. those that we *actively* inquire about. But I think that a case could be made that diversity in inquiry is also good fine-grained, i.e. those presented by different resolutions. I won't be able to get to the value of diversity in reasoning here, but I trust that the

reader can herself easily imagine cases in support of this. The framework discussed here only attempted to portray diversity in reasoning.

I have done this by providing a precise formulation of Uniqueness. UNIQ states that in order to have the same doxastic attitude, agents must begin with the same priors, possess the same body of total evidence, and have the same sensitivity to evidence. If these conditions are not met, then it is a case where Uniqueness does not apply and therefore, not an argument against it. However, I argue that Uniqueness remains untenable even if we grant these conditions because evidence is not sufficient for belief. The questions one asks influence what one will end up believing, all epistemic things considered. Thus, I argue that Uniqueness is false.

If I'm right, I do not think that we have to part ways with Uniqueness entirely. I think that we can establish rules on how one should conduct oneself towards a body of evidence. But Uniqueness is not enough to determine what our doxastic attitudes should be; as Uniqueness cannot address the rules that govern the practical domain of epistemic rationality, especially the ones discussed in this paper.<sup>31</sup>

## Notes

<sup>1</sup> One might infer that Uniqueness is an extension of Evidentialism, first championed by Feldman and Conee (1985). Evidentialism states that “doxastic attitude D toward proposition p is epistemically justified for [subject] S at [time] t if and only if having D toward p fits the evidence S has at t” (p. 15). But as Ballantyne and Coffman (2011) point out, Uniqueness entails Evidentialism but not the other way around.

<sup>2</sup> The view is sometimes associated with teleological epistemology or epistemic consequentialism. I am not going to be able to discuss the differences here. I am mostly using epistemic instrumentalism as per personal preference. For this paper, if one wants, one can use it interchangeably with teleological epistemology. However, I believe distinctions can be made between different views as I don't think epistemic consequentialism is necessarily teleological under a certain interpretation of *telos*.

<sup>3</sup> Several papers have been written that align with this argument for and against Uniqueness. Some argue that being epistemically *unique* is valuable in instances of planning to hold a doxastic attitude (see Dogramaci and Horowitz 2016; Greco and Hedden 2016; cf. response from Thorstad 2018). Some also

argue that Uniqueness is required to meaningfully defer to other agents (see Dogramaci and Horowitz 2016; Levinstein 2015; cf. responses from Jung 2017; Meacham 2019; Thorstad 2018).

<sup>4</sup> This example is in light of the example originally given by Rosen (2001), and later on by White (2005).

<sup>5</sup> Schoenfield (2014) used the term *irrelevant factors* which may include one's upbringing or the community one grew up with among many others.

<sup>6</sup> See Rosen (2001), Decker (2012), Schoenfield (2014) and Titelbaum and Kopec (2018) for counterexamples that defenders of Uniqueness might think of as violating UNIQ condition (2).

<sup>7</sup> We could as well think of this as *pot-P*. I am only using *not-P* here to present the literature.

<sup>8</sup> This example is a rendition of the Reasoning Room example by Titelbaum and Kopec (2018).

<sup>9</sup> He attributes this idea to Conee (2010) and Goldman (2010).

<sup>10</sup> Schoenfield (2014) also provides an account of epistemic standards that are similar to *ur-priors*, although they are not conceived in a Bayesian framework.

<sup>11</sup> White (2005) describes a non-evidential factor that “takes up the slack” when deciding what one should believe. Kelly (2013) identifies that this non-evidential factor, or “James point”, pulls the credences towards either belief or disbelief. Following Horowitz (2018), I am using the term *Jamesian* to refer to arguments inspired by James's work (1897). Note that Kelly's “James point” is different from this.

<sup>12</sup> Horowitz (2018) provides an argument against *Jamesian* goals in the context of Epistemic Utility Theory (EUT). EUT focuses on the values achieved when one acquires true beliefs, i.e. truth.

<sup>13</sup> One example that pertains to this development of epistemic standards is from Simpson (2017) who describes different epistemic standards relates to different cognitive abilities (See Stapleford 2018 for a response).

<sup>14</sup> I am not particularly inclined to say that *Jamesian* goals would be part of that set since *Jamesian* goals would interfere directly with outcomes and not just the process of belief-revision. This is only for consideration. If it is, then an argument has to be made for it. But as far as I can tell, no one in the Uniqueness-Permissivism debate is explicitly endorsing *Jamesian* goals as part of one's epistemic standards.

<sup>15</sup> Note, however, that resolutions can be part of these standards. One can argue that resolutions, what I argue for in §3, are part of these standards. If one accepts this, one already accepts that epistemic rationality has parts that are practical. You can jump to §4 and see why these standards are not normativized the same way as the other members of the set of epistemic standards.

<sup>16</sup> These properties, however, are often evaluated based on the outcome of the updating process. Therefore, it is possible that we mistake a person as precise and accurate given their standards, when in reality that person just happen to have something like epistemic luck. Although it seems that I am required to say something about what the members of the set of epistemic standards are, I am refraining from doing so, mostly because it will require a laundry list of rules depending on one's view about evidence.

<sup>17</sup> One way to think of this is that *uniqueness*, as understood outside the debate, is associated to whether a certain variable (say numerical) could represent a *specific* thing or phenomenon.

<sup>18</sup> Bayesians commonly adopt the Lockean thesis (Foley 2009) as the threshold that determines whether one believes or disbelieves in a bipartite model of credal range. If applied to a tripartite model, suspension of judgment is made available as an option between belief and disbelief.

<sup>19</sup> However, Horowitz (2014) seems to say that one's epistemic standards can "give you the best shot at having true beliefs". I don't think agree with this because one's evidence can only go so far at providing true beliefs. What I mean is that evidence doesn't dictate the contents of one's beliefs, as explained in §3.2.

<sup>20</sup> For a good illustration on how these set-theoretic operations are applied to sets of possible worlds, see Chapter 2 of Titelbaum (forthcoming).

<sup>21</sup> If we work with credences and ordinary conditionalization, every proposition outside of this intersection would receive the credence 0 after updating with *E*.

<sup>22</sup> Some of the discussions on the semantics of questions can be found in Hamblin (1958), Hamblin (1973), Karttunen (1977), Groenendijk and Stokhof (1982), Belnap (1983) and Groenendijk and Stokhof (1984).

<sup>23</sup> Some have argued epistemic rationality doesn't have any practical components, e.g. Kelly (2003). For some recent discussions, see Leary (2017) and Kopec (2018).

<sup>24</sup> There are multiple views about concepts (see Margolis and Laurence 1999, 2014) and sortals (see Grandy 2006) that I am not going to get into for this paper.

<sup>25</sup> This is a case of Meno's Paradox as the agent already knows what they inquire about.

<sup>26</sup> The discussion of subject-matter is taken from Yalcin (2018) who is following Lewis (1988); cf. Yablo (2014) on a discussion of *aboutness*. See Jackson (ms.) for a somewhat similar discussion on subject-matters within the Uniqueness-Permissivism debate. However, Jackson frames the discussion in terms of priming and salience, wherein specific doubts to a belief are raised once the possibility to doubt is raised.

<sup>27</sup> Although indirectly, this is an application of an idea I attribute to Dr. Katharina Nieswandt's lecture on Anscombe (1969, 1978) at Concordia University during the Winter of 2018. This is also available in Nieswandt (2017) wherein she draws a connection between Anscombean philosophy and Rawls (1955).

<sup>28</sup> Some authors have no problems adopting some form of logical omniscience (e.g. Stapleford 2018). But it will be another paper to directly address this commitment to logical omniscience. For an elaboration of the different ways logical omniscience is conceived in terms of credences, see Dogramaci (2018).

<sup>29</sup> Dividing logical space finely this way is different from denying the evidence. My intuition says that the former is a form of skepticism. The latter, on the other hand, can be explained by analyzing what we do with propositions, i.e., as objects of our propositional attitudes. Anker (2015) and Soames (2015), for example, develop what is called *act theories* of propositions.

<sup>30</sup> Yalcin (2018) provides a good description of visibility at the latter part of the paper. How backgrounded information would be accessible through memory or recollection, especially in modelling possible worlds, could be a topic of future scholarship.

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