

Against the Total Evidence Requirement

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The Requirement of Total Evidence (RTE) asks an agent to make her confidence in a belief proportional to the support it receives from her total evidence. This paper examines (RTE) as a norm of epistemic rationality and argues that it is problematic. Looking at the work of Peter Achinstein (2001) on the notion of evidence it becomes clear that (RTE) endorses a view of the constitution of evidence that is neither necessary nor sufficient for something to count as evidence. To overcome this and other deficiencies associated with (RTE) a move is made to an objective view of evidence. This move aligns epistemic rationality with scientific rationality in seeking to capture veridical evidence. It also leads to a new norm of epistemic rationality—the Proper Subset Evidence Requirement (PSER).

The Requirement of Total Evidence (RTE) is a methodological principle used in probability theory and epistemology. It requires an agent to consult her total body of evidence when assigning confidence in, or credence to, a proposition. Despite the widespread use of the principle it is seldom defended.¹ Perhaps this is because the principle enjoys intuitive appeal. It seems rational to consult one's total evidence because ignoring part of one's evidence may result in missing a defeater. A defeater could change the outcome of an inductive argument, so it seems rational for an agent to consult *all* evidence under the threat of potential outstanding defeaters. This helps the agent produce an argument that is stable in the face of all relevant evidence. Despite the appeal of these considerations, I'll argue that (RTE) loses its appeal when its underlying commitments are exposed.

There are several reasons why it's important to consider (RTE). First, the requirement underlies important arguments in epistemology.² For example, Timothy Williamson's $E = K$ argument endorses (RTE), as one's total evidence equals one's total body of knowledge.³ Ram Neta argues (RTE) is a core adequacy condition on epistemic rationality, guiding the determination of evidence in one's possession.⁴ Evidentialists like Earl Conee and Richard Feldman hold that one ought to believe that which is supported by one's total evidence.⁵ Another reason why it's important to

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¹ This problem was identified as far back as Ayer 1972: 55-57. The use of RTE without adequate defense persists to this day (e.g., Maher 1996 and Kelly 2008).

² See, for example, Davidson 1985: 141-142, Adler 1989, Moser 1989: 42, Williamson 2000: 189, Noordhof 2003: 76, Whitcomb 2008: 163, and Kelly 2008: 938-939.

³ See Williamson 2000.

⁴ See Neta 2008.

⁵ See Conee and Feldman 2004.

consider (RTE) is that it's widely invoked in probability theory.⁶ Rudolf Carnap first formulated (RTE), and, as Branden Fitelson has pointed out, "Most modern Bayesians have (usually only implicitly, and without argument) accepted...Carnap's requirement of total evidence."⁷ Finally, (RTE) is important because it can be interpreted and used to undermine first-order philosophical theorizing. For instance, a strategy to undermine Williamson's $E = K$ argument might run as follows:

1. All and only evidence is knowledge ($E = K$).
2. Evidence consists of all true propositions.
3. Subjective evidence is part of one's total evidence.⁸
4. Subjective evidence allows false propositions to count as evidence.
5. One's total evidence does not consist of all true propositions.
6. Thus, because knowledge is factive, it's not the case that all and only evidence is knowledge.

The strategy above shows how an argument that presupposes (RTE) can be undermined from within by arguing for a revised version of (RTE). As such, (RTE) can support or undermine philosophical arguments, and arguing against (RTE) has the potential to undermine arguments in which it is presupposed without defense or explicit interpretation.

In this paper, I'll argue against (RTE) as a norm of epistemic rationality.⁹ I'll claim that epistemic rationality should be guided by a norm that aligns with scientific rationality in endorsing veridical evidence. Attaining such evidence requires taking a proper subset of the total evidence, not *all* evidence. Additionally, norms of epistemic rationality are undergirded by probabilistic commitments. Bringing these commitments to light shows why (RTE), as typically understood, is not well-grounded. To reach a norm able to capture veridical evidence a shift is made to an objective notion of probability. Such a shift yields a well-grounded norm of epistemic rationality. I'll start by considering the notion of evidence.

⁶ For example, see Carnap 1962, Hempel 1965, Salmon 1967, Sober 1975, Achinstein 1983, Fetzer and Almeder 1993, and Maher 1996.

⁷ Fitelson 2008: 626.

⁸ A defense of this premise can be given by utilizing Peter Achinstein's work on the concept of evidence. Subjective evidence is one way of viewing the constitution of evidence (Achinstein 2001: 22-24). In any epistemic situation subjective evidence, which includes an agent's beliefs, is among the total possible evidence. Disregarding such evidence requires taking a proper subset of the total evidence, and, as such, (RTE) does not support $E = K$. Included in the total evidence will be things Williamson does not want to count as evidence.

⁹ One way of understanding epistemic rationality is in relation to its truth-directedness. It is truth-directed as a goal, and it involves belief in accordance with what one's evidence (strongly) supports. Whether one's evidence supports the truth of a belief depends on the evidence one possesses for the belief.

1. Questions and Accounts

When considering the notion of evidence there are three important questions to ask and attempt to answer:

- A. **Constitution:** What *is* evidence?
- B. **Possession:** What evidence e does a subject S have at a given time t ?
- C. **Confirmation:** How probable is a hypothesis h on one's evidence e ?

These questions clarify the focus of different formulations of (RTE). It's possible to formulate (RTE) in at least two modes: formal and informal. The focus is on Confirmation when (RTE) is formulated in a formal mode. Carnap originally formulated the principle with regard to confirmation in inductive logic.¹⁰ Fitelson has precisified Carnap's principle as follows:

- (RTE-F)** *E* evidentially supports *H* for an epistemic agent *S* in a context *C* if and only if *E* confirms *H*, relative to *K*, where *K* is *S*'s total evidence in *C*.¹¹

When (RTE) is formulated in an informal mode the focus is on Possession. Ram Neta formulates (RTE) in this mode as follows:

- (RTE-I)** [W]hat epistemic rationality requires is that your confidence in h at t be proportional to the degree to which h is supported by *all and only* the evidence that you possess at t .¹²

An assumption underlying (RTE-I) is that Possession sheds light on Confirmation. It's possible to take this a step further and argue Constitution determines Possession. As Williamson says, "How much evidence one *has* for the proposition depends on what one's evidence *is*."¹³ Thomas Kelly corroborates Williamson's sentiments by indicating that Possession hinges on, "what sorts of things are eligible to serve as evidence."¹⁴ Peter Achinstein, a preeminent philosopher on the concept of evidence, has identified four accounts of the Constitution of evidence. To his work I'll now turn.

¹⁰ Specifically, "[I]n the application of inductive logic to a given knowledge situation, the total evidence available must be taken as a basis for determining the degree of confirmation" (Carnap 1962: 211).

¹¹ Fitelson 2008: 626. It's important to note that there are technical problems with (RTE) Fitelson identifies. He calls the search for an unproblematic formulation of (RTE), "one of the 'holy grails' of contemporary subjective Bayesian confirmation theory" (628). This indicates, in part, the depth of commitment to the principle by Bayesian sympathizers.

¹² Neta 2008: 90.

¹³ Italics mine. Williamson 2000: 189.

¹⁴ Kelly 2008: 940.

Achinstein (2001) provides a complete taxonomy of the Constitution of evidence by way of an example from the history of science.¹⁵ In 1883 Heinrich Hertz conducted a series of experiments to determine whether cathode rays exhibited any electro-magnetic effects. Hertz's experiments, as evidence, showed no such effects. As a result, Hertz hypothesized that cathode rays are not electrically charged. In 1897, fourteen years later, a physicist named J. J. Thomson discovered that Hertz's experiments were flawed. Hertz's tubes were not properly evacuated. Thomson attained a higher vacuum in his experiments and cathode rays showed electrical effects. Thomson hypothesized that cathode rays are electrically charged. His conclusion is in fact true. Given this background it is possible to ask, "Were Hertz's results evidence for his conclusion that cathode rays are *not* electrically charged?" Answering this question brings out four accounts of the Constitution of evidence.

One possible answer is that Hertz's experiments were evidence that cathode rays are not charged. This is to appeal to Epistemic Situation (ES) evidence. It is to appeal to what Hertz was justified in believing based on his epistemic situation, based on what he knew. Further, anyone in Hertz's epistemic situation would be justified in drawing his conclusion. So, Hertz's results were ES-evidence for his hypothesis.

Another possible answer is that from 1883 to 1897 Hertz's experiments were evidence that cathode rays are not charged, but after 1897 they were not. This relativizes what counts as evidence to subjects, namely, what physicists' believe. From 1883 to 1897 physicists were justified on the basis of Hertz's results in believing that cathode rays are not electrically charged. But after Thompson showed the falsity of Hertz's hypothesis physicists no longer regarded Hertz's results as evidence for his hypothesis. So, after 1897 his results were not evidence. This is to regard Hertz's results as Subjective evidence for his conclusion.

A final possible answer brings out two accounts of the Constitution of evidence. According to this answer Hertz's results are not and never were evidence for his conclusion. Even though physicists, from 1883 to 1897, were not aware of the falsity of Hertz's hypothesis this doesn't change the fact that his results were based on flawed experiments. So, as Thompson showed, his experiments never were genuine evidence for his conclusion. This answer comes in two varieties. The weaker variety is called Potential evidence because it only requires the evidence to make the hypothesis likely to be true, beyond a well-defined threshold. The stronger variety is called Veridical evidence in that it requires the hypothesis to in fact be true.

¹⁵ See Achinstein 2001: Ch. 2.

Hertz's results never did, in fact, make likely or true his hypothesis, so they never were Potential or Veridical evidence.

Epistemic rationality is aligned with scientific rationality in seeking to capture Potential and Veridical evidence. Epistemic rationality is not primarily concerned with historical or cultural anthropology. It seeks to establish what one ought to believe, and to what degree, in a way that does not necessarily depend on what a subject believes or on what epistemic situation a subject happens to find himself in. Likewise, this is a hallmark of scientific rationality because as Achinstein explains:

A scientist wants to know whether some experimental results reported in *e* provide a good reason for believing a hypothesis *b*—not a good reason for someone in a particular epistemic situation, and not just a good reason for him, but a good reason period, independent of epistemic situations. And he wants to know whether *e* is a good reason in the strong sense. His goal is to obtain veridical evidence, since he seeks true hypotheses. And whether it is veridical evidence has nothing to do with what he or anyone else knows or believes. It is not veridical evidence for one type of epistemic situation but not another.¹⁶

Thus, a norm governing epistemic rationality ought to align with scientific rationality in aiming at true hypotheses or beliefs. Epistemic rationality, understood as truth-directed as a goal, should endorse Potential and Veridical accounts of the Constitution of evidence. Yet, the total possible evidence in an epistemic situation may include Subjective and ES-evidence.

2. Shifting to Objective Probability

In this section I'll motivate and establish a shift to Objective Epistemic Probability. This type of probability is able to yield Veridical evidence, which makes it ideal for undergirding a norm of epistemic rationality. To motivate this shift I'll look at deficiencies underlying (RTE).

(RTE) only aligns with Subjective and ES-evidence. Carnap's version of (RTE) is tied to his logical theory of probability. This generates a view of the Constitution of evidence most aligned with ES-evidence. His account is like ES-evidence in that (i) it is an abstract notion, (ii) it focuses on the justification of belief, and (iii) it does not require the hypothesis to be true.¹⁷ Fitelson's (RTE-F) seems akin to ES-evidence. It is relativized to an agent

¹⁶ Ibid: 37.

¹⁷ Ibid: 66-67. Important differences between Carnap's evidence statements and the notion of ES-evidence include: ES-evidence requires *e* to be true, but Carnap's theory only requires the weaker counterfactual: if *e* is true, then *e* is evidence that *b*; Carnap's evidence statements are not explicitly relativized to epistemic situations; Carnap's evidence statements are apriori, whereas ES-evidence statements are either apriori or empirical; and, his version of evidence lacks features regarding what one is justified in believing, features central to ES-evidence.

in a context. However, Fitelson elaborates (RTE-F) within the context of subjective Bayesian theory. This makes (RTE-F) undergirded by subjective probability and aligned with Subjective evidence, which focuses on degrees of belief.¹⁸ Finally, Neta's (RTE-I) aligns with Subjective evidence because it is tied to what evidence actual agents possess and whether agents can use all their evidence to rationally regulate their attitudes.¹⁹

Another deficiency of (RTE) is that it's based on a conception of evidence that is neither necessary nor sufficient for something to count as evidence. (RTE) is committed to the positive relevance, or probability raising, account of evidence. According to this account e is evidence for b only if e raises the probability of b .²⁰ Evidence is relevant to a hypothesis if it has a positive probabilistic effect on a hypothesis. Such an effect makes it rational to be more confident that the hypothesis is true. Further, as (RTE-I) urges, an agent should proportion her confidence in b , at t , to the support it receives from her total evidence. But counter-examples to the positive relevance notion of evidence can be raised.²¹

Positive relevance is not sufficient for something to count as evidence. When there's only a slight increase in probability, but one must nonetheless count the proposition as evidence for the hypothesis, positive relevance is insufficient. For instance, let e be that *Michael Phelps was swimming training laps on Tuesday*, and b be that *Michael Phelps drowned on Tuesday*. Swimming increases one's chances of drowning, even for an Olympic champion like Michael Phelps. So, given the positive relevance notion of evidence, the fact that Michael Phelps was swimming training laps in the water on Tuesday is evidence that he drowned on Tuesday. As this example suggests, simply increasing probability is not sufficient for something to count as evidence.

Positive relevance is also not necessary for something to count as evidence. This occurs when there's one batch of evidence for a hypothesis, and another batch of identical evidence is added to the first batch of evidence. Though the second batch fails to increase the probability of the

¹⁸ Fitelson 2008: 626. One problem with this version of (RTE), as Fitelson details, is that it can be used in a *reductio* of Bayesian confirmation theory. In addition, there are independent reasons to reject this formulation of (RTE). It leads to Nelson Goodman's "grue" paradox and the problem of old evidence. As a result, Fitelson reformulates (RTE) utilizing Carnap's apriori conditional probability function. This, however, returns (RTE) to the notion of ES-evidence. Either version fails to align with or yield Veridical evidence.

¹⁹ This implies a strong commitment to the Ought Implies Can (OIC) principle. As Neta says, "if this is what rationality requires of me, then I must have the ability to comply with this requirement" (Neta 2008: 114). The new norm of epistemic rationality I formulate does not share this commitment to (OIC).

²⁰ This is also an account of evidence assumed by Williamson 2007: 227. Specifically, the conditional probability of b given e is greater than the unconditional probability of b .

²¹ These counter-examples are adapted from Achinstein 2001: 70.

hypothesis it can, nevertheless, provide (strong) evidence for the hypothesis. Consider the following example:

- (e_1) *New York Times* reports that Barack Obama owns all but one of the 1000 tickets sold in the lottery.
- (e_2) *Washington Post* reports that Barack Obama owns all but one of the 1000 tickets sold in the lottery.
- (h) This is a fair lottery in which one ticket drawn at random will win.
- (b) Barack Obama will win the lottery.

It is possible to assign probabilities to the example above as follows: $\text{Prob}(b|e_1 \wedge e_2 \wedge b) = \text{Prob}(b|e_1 \wedge b) = .999$. The result is that (e_2) does not increase the probability of (b) over and above the probability of (b) given ($e_1 \wedge b$). Assuming, as the example does, that the *Washington Post* is accurate in its factual report, the *Post's* report, given the *Time's* report, provides strong evidence that b . The positive relevance notion of evidence cannot endorse this claim. The *Post's* report fails to increase the probability of the hypothesis beyond the probability already indicated by the *Time's* report. This shows that positive relevance is not necessary for something to count as evidence. Is there an alternative probabilistic notion of evidence?

Objective Epistemic Probability avoids problems associated with positive relevance because it is a threshold account of evidence. Only if something passes a well-defined threshold does it count as evidence.²² As Achinstein argues:

Having a justification (or a good reason) for belief, in so far as it depends on probability, is a threshold concept. There needs to be a significant threshold of probability for b before b can be said to have a justification. Increase in b 's probability is neither necessary nor sufficient to achieve that threshold.²³

Potential or Veridical evidence for b provides a *good* reason to believe b . This makes it rational to be confident in the truth of the hypothesis. As such, having confidence in b is also a threshold concept.²⁴ Now I'll explain some features of Objective Epistemic Probability.

²² For Achinstein, Potential and Veridical evidence require a probability greater than .5 (Ibid: 116). That is, e must make b more likely than its negation. I will not explicitly endorse this assumption. I'm committed to the idea that there must be a well-defined threshold value and something must pass that threshold to count as evidence. I leave open for debate whether in different contexts, depending on the agents and the stakes, whether the threshold must always be set at greater than .5.

²³ Ibid: 93.

²⁴ Confidence is like crowds, electricity and fear in this regard. As Achinstein says, "One person in the audience is not a crowd, even a small one. Two volts of electricity are not

There are several features of Objective Epistemic Probability that set it apart from other forms of probability. For one, the concept of “belief” is categorical, whereas the “reasonableness of belief” comes in degrees. This type of probability measures how reasonable it is to believe a proposition. It is not a measure of how much belief one ought to have. Whether it is reasonable to believe or have confidence in *b* is categorical, but the reasonableness of belief in *b* is not. Reasonableness of belief admits of degrees and is subject to the rules of probability. Reasonableness is also objective. To illustrate this point consider the case of Ann eating arsenic:

[A]lthough eating a pound of arsenic is fatal within 24 hours, suppose that authorities in the community believe that arsenic, even a pound of it, promotes health when put on food. And suppose that people know that Ann ate a pound of arsenic 24 hours ago, and also know what the authorities believe and have no reason to question them. Is it, or is it not, reasonable to believe Ann is dead or dying?²⁵

There are at least two ways of answering this question. The first answer holds that it is not reasonable to believe Ann is dead or dying. This is to answer the question using the concept of ES-evidence. Because the authorities in this community extol the benefits of arsenic, and the people in the community have no reason to believe otherwise, it is not reasonable to believe Ann is dead. This relativizes what it’s reasonable to believe to an epistemic situation. Another answer holds that it’s reasonable for people to believe Ann is dead even if, unbeknownst to them, arsenic in that quantity is fatal within 24 hours. This links what it’s reasonable to believe to facts about the properties of arsenic and its effects on the body. This answer rests on a supervenience claim: the normative fact about what it’s reasonable to believe supervenes on the physical fact about what arsenic does to the body if ingested. This brings objectivity into the picture because we can ask what it’s reasonable to believe without considering the agent’s other beliefs or epistemic point of view. Thus, whether *b* is reasonable to believe is abstracted away from the beliefs of real or hypothetical agents.

These considerations have set the stage for formulating a new requirement on rational belief, one that overcomes deficiencies inherent in (RTE). In the next section I’ll formulate this norm.

sufficient to produce any pain in me. A death rate of 1 per 500 million rounds of golf is not enough to produce any fear in me that I will die playing golf” (Ibid: 74). Similarly, if I own only 1 ticket in a 100 million ticket fair lottery I have no confidence in winning even though I have increased my chances of winning. There is not enough probability, above a threshold, for me to have any confidence.

²⁵ Ibid: 96.

3. A New Norm of Epistemic Rationality

The Proper Subset Evidence Requirement (PSER) is undergirded by Objective Epistemic Probability. Such probability allows for some relativizations.²⁶ Things are not relativized to beliefs, agents or epistemic situations. They are relativized to conditions that allow for determining the reasonableness of belief from an objective perspective.

The first condition is the Temporal Condition. This condition acknowledges that the statistical facts of a case may differ at different times. The degree to which it is reasonable to believe that a person will win the lottery will vary from t_1 to t_2 if at t_1 that person owns no lottery tickets and at t_2 the same person own 75% of all lottery tickets. The second condition is the No Interference Condition. This condition protects against things negatively influencing the determination of the reasonableness of belief. If a coin is under the control of a magnet or destroyed in mid-air it will not be reasonable to believe that the coin will obey standard probabilities governing fair coins. Recalling the Thompson and Hertz case, Thompson proved that Hertz's experiments violated this condition. Because the tubes were not properly evacuated there was an interference with the electrical charge of the cathode rays. Lastly, there's the Disregarding Condition. This is similar to a *ceteris paribus* clause. For example, microconditions (e.g., the force applied, the state of the air, and so on) can influence the outcome of a coin flip. Yet microconditions are very difficult to determine. So they are typically disregarded for the purpose of determining probabilities. Let me relate these conditions back to the formulation of (PSER).

The Temporal Condition enables (PSER) to handle Possession of evidence at a time, which is something Neta sought to capture with (RTE-I). The No Interference Condition allows (PSER) to hold at bay things that might interfere with determining what the facts of a case require with regard to what it's reasonable to believe. Subjective and ES-evidence can interfere with determining what it's reasonable to believe, and to what degree, with regard to the facts of a case. Looking at the case of Ann eating arsenic, taking into consideration ES-evidence may make it reasonable for the people in Ann's community to believe Ann is alive and well even though she ate a pound of arsenic and is most certainly dead. Though it's possible to give an answer ground in ES-evidence, it's clearly not what one *ought* to believe. Epistemic rationality should set the bar of rationality higher—in alignment with scientific rationality—even if this means that facts in addition to (or contrary to) facts an agent can cognitively access may impact

²⁶ Ibid: 106-108.

what it's reasonable to believe.²⁷ The Disregarding Condition further crystallizes the commitment to epistemic externalism inherent in (PSER). If the conditions that factor into the determination of reasonableness must be cognitively accessible or luminous to the agent, then those conditions must not be hidden from the agent. A condition might be luminous in virtue of our disposition to recognize or recall that condition. However, for the purpose of determining what it's reasonable to believe, conditions that are not luminous to the agent may nonetheless impact what it's reasonable to believe. What it is reasonable to believe does not require the agent to have a luminous mental state containing that condition as its content.²⁸ It would be difficult, if not impossible, for all the conditions that factor into epistemic rationality with regard to probability to be luminous to the agent. Thus, luminosity is a condition that can be disregarded for the purpose of determining what it's reasonable to believe, and the demand imposed by (RTE) to access *all* evidence can be relaxed.²⁹

²⁷ This consideration accords with the notion of Veridical evidence, which embraces empirical incompleteness. That is, whether *e* is a good reason to believe *b* can depend on facts in addition to *e* (e.g., whether there's a flaw in the experiment's design). These are facts that the agent may not have the potential to be aware of. To claim that only facts in one's mind, dispositional or occurrent, need to determine what it's rational to believe is to assume an internalist perspective, to align with Subjective and ES-evidence, and to beg the question against an objective account of evidence, which aligns with an externalist understanding of epistemic rationality and justification.

²⁸ This might be akin to something like Williamson's anti-luminosity argument (Williamson 2000: Ch. 4). But I must indicate that (PSER) is not an account of knowledge. It's only an account of reasonableness of belief. Even though having good reasons can be impacted by things outside the agent's head, utilizing such an externalist commitment, coupled with disregarding luminosity, does not turn (PSER) toward Williamson's knowledge-first account, which is committed to (RTE). It's precisely that Williamson is committed to a positive relevance notion of evidence, coupled with (RTE), which makes his account of evidence problematic and undesirable.

²⁹ Only in very simplified cases is (RTE) not a burden on one's cognitive faculties. Once cases are scaled remotely close to the real-world, the cognitive demands of luminosity imposed by (RTE) quickly outstrip what one is actually or possibly capable of accessing. As such, (RTE) is a chronic violator of Ought Implies Can (OIC). It violates (OIC) because it's limited to Subjective and ES-evidence, which require the conditions that influence rationality to be luminous (or potentially luminous) to a real or hypothetical agent. (PSER), by contrast, makes no such demands. Non-mental conditions, like physical facts, are not always luminous. Even though (PSER) makes use of propositions about the facts, which are mental entities, the normative facts are consequential on the physical facts. So propositional reports about the facts are, ultimately, ground in physical conditions. Epistemic rationality on this account admits that an agent may not always be able to cognitively access all the empirical facts which nonetheless impact what it's reasonable to believe. This is a welcome development. Why? Because requiring an agent to assess her total evidence leads to undesirable commitments about what it means to for her to possess her total evidence. For instance, Neta explains that the only way the content of one's total evidence can be identified is through ostension. As he wonders, "Can I tell you what all of my evidence is? The only way that I know how to tell you is by ostension: *this*—I might say (perhaps with a vague sweeping gesture)—is all my evidence." (Neta 2008: 115). (PSER) avoids vague gestures as a way of identifying one's relevant evidence. Instead, non-normative facts can inform normative facts, and the agent is not required to access (or point to) all those facts.

Given the previous considerations, for the purpose of determining what epistemic rationality requires with regard to Potential and Veridical evidence, Subjective and ES-evidence can be held at bay to prevent interference. Such evidence may also be disregarded. This avoids fixating the scope of factual considerations on facts that are (or could be) luminous to an agent given an agent's beliefs or epistemic situation. An objection to this account might arise in the form of a question: Isn't disregarding Subjective and ES-evidence disrespecting possible evidence?³⁰

In response, I'll point out that disregarding evidence or claiming that it interferes with determining what epistemic rationality requires is not equivalent to disrespecting evidence. Disrespecting evidence is to claim that it is unknown or unknowable when it may, in fact, exist or be knowable. Disregarding evidence is to claim that it is being ignored based on the purpose of investigation. As Achinstein explains, "The claim is not that interference conditions and microconditions are unknown by some (type of) person or group. It is simply that they are being ignored in determining a probability."³¹ (PSER) does not claim that Subjective evidence and ES-evidence are unknown or unknowable, though such evidence might be. The claim is not about what agents in an epistemic situation know or don't know. The claim is that Subjective evidence and ES-evidence *en masse* are difficult to obtain because they imply strong commitments to luminosity. This is not to claim, however, that such evidence is not part of the total evidence in a given epistemic situation. In fact, (PSER) claims the opposite: Subjective evidence and ES-evidence are part of the total evidence, and that's why there's a need to take a proper subset of the evidence.

Depending on the purpose of investigation, Subjective evidence and ES-evidence might be salient. If one is conducting a historical investigation, then Subjective evidence may be salient.³² If, on the other hand, one is trying to determine whether someone formed a justified belief in a given epistemic situation, then ES-evidence may be salient. Epistemic rationality, as previously claimed, should be aligned with scientific rationality. Scientists do not ultimately want to discover what a community was justified in believing given what they knew; instead, scientists want to discover whether a hypothesis is in fact true. Epistemic rationality is not primarily concerned with cultural anthropology or the history of beliefs. It is concerned with normative claims about what one ought to believe. I reinforce this point because it blocks the objection that (PSER) is still working with the total

³⁰ This question is echoed in Feldman 2005.

³¹ Achinstein 2001: 108.

³² Subjective evidence is salient, "when all one wants to know are the reasons some person has or had for believing something, whether or not these are good reasons, whether or not the person was justified in believing a hypothesis for those reasons" (Ibid: 36).

relevant evidence and just ignoring that which is irrelevant, namely Subjective and ES-evidence. The total evidence still includes Subjective and ES-evidence. This is why it's important to take a proper subset of the evidence when determining what it's reasonable to believe with the goal of aiming at the truth. Given this clarification, I turn to formulating (PSER).

It's possible to formulate (PSER) in the formal mode. Let ni stand for *no interfering conditions*, and let $d(mi)$ stand for *disregarding microconditions*. Also, let k represent a well-defined threshold of probability. Consider the following conditionalized version of a (PSER) claim:

$$\text{(PSER-F)} \quad \text{Prob}_t[h|e_p \wedge e_v \wedge ni \wedge d(e_s \wedge e_{es})] > k$$

This claim says that on the assumption that there's potential evidence e_p and veridical evidence e_v , and there are no interfering conditions, and subjective evidence e_s and ES-evidence e_{es} are being disregarded, the degree of reasonableness of believing the hypothesis h , at time t , is greater than a well-defined threshold of probability k . It's also possible to represent (PSER) in the informal mode as follows:

(PSER-I) Epistemic rationality requires one to proportion one's confidence in h at t to the degree to which h is supported by all and only a proper subset of one's total evidence (i.e., the Potential and Veridical evidence one possesses at t).

An upshot of (PSER) is that it answers all three important questions regarding evidence. First, it answers the Constitution question by grounding evidence in a conception of probability that avoids problems associated with the probability commitments underlying (RTE). Second, (PSER) answers the Possession question by indicating that only if an agent has Potential and Veridical evidence, evidence objectively probable beyond a well-defined threshold, does that agent have a good reason to believe h ; and, only then does the agent possess rational confidence, understood as a threshold concept, in the truth of h . Third, (PSER) answers the Confirmation question. On the assumption that e is the case the degree of reasonableness of believing h is indicated by the resulting probability. A hypothesis h is confirmed to the degree that it's supported by one's Potential and Veridical evidence (i.e., a proper subset of the total evidence).

4. Conclusion

In this paper, I raised three important questions regarding evidence and argued that Constitution determines Possession. Looking at Achinstein's work I identified four accounts of the Constitution of evidence. Subjective and ES-evidence were committed to the positive relevance notion of what counts as evidence. (RTE), as typically formulated, was linked to Subjective

and ES-evidence. This was shown to be problematic because an increase in probability is neither necessary nor sufficient for something to count as evidence. Epistemic rationality, properly understood, endorsed Potential and Veridical notions of the Constitution of evidence. Capturing such evidence required shifting to Objective Epistemic Probability. By looking at what it's reasonable to believe, with regard to Objective Epistemic Probability, the most desirable answer about the Ann eating arsenic case emerged. This led to a formulation of (PSER), which aligned with scientific rationality in investigating Potential and Veridical evidence. (PSER) allowed for disregarding Subjective and ES-evidence in order to determine what epistemic rationality required. This resulted in the formulation of a norm of epistemic rationality that avoided problematic features of (RTE).

References

- Achinstein, Peter. 1983. Concepts of Evidence. In *The Concept of Evidence*, edited by P. Achinstein. New York: Oxford University Press.
- . 2001. *The Book of Evidence*. New York: Oxford University Press.
- Adler, Jonathan. 1989. Epistemics and the Total Evidence Requirement. *Philosophia* 19 (2): 227-243.
- Ayer, A. J. 1972. *Probability and Evidence*. New York: Columbia University Press.
- Carnap, Rudolf. 1962. *Logical Foundations of Probability*. 2nd ed. Chicago: University of Chicago Press.
- Conce, Earl, and Richard Feldman. 2004. *Evidentialism: Essays in Epistemology*. New York: Oxford University Press.
- Davidson, Donald. 1985. Deception and Division. In *Actions and Events: Perspectives on the Philosophy of Donald Davidson*, edited by E. LePore and B. McLaughlin. New York: Basil Blackwell.
- Feldman, Richard. 2005. Respecting the Evidence. *Philosophical Perspectives* 19 (1): 95-119.
- Fetzer, James H., and Robert F. Almeder. 1993. *Glossary of Epistemology/Philosophy of Science*. New York: Paragon House.
- Fitelson, Branden. 2008. Goodman's "New Riddle". *Journal of Philosophical Logic* 37 (6): 613-643.
- Hempel, Carl G. 1965. *Aspects of Scientific Explanation*. New York: Free Press.
- Kelly, Thomas. 2008. Evidence: Fundamental Concepts and the Phenomenal Conception. *Philosophy Compass* 3 (5): 933-955.
- Maher, Patrick. 1996. Subjective and Objective Confirmation. *Philosophy of Science* 63 (2): 149-174.
- Moser, Paul K. 1989. *Knowledge and Evidence*. New York: Cambridge University Press.
- Neta, Ram. 2008. What Evidence Do You Have? *Br J Philos Sci* 59 (1): 89-119.
- Noordhof, Paul. 2003. Self-Deception, Interpretation and Consciousness. *Philosophy and Phenomenological Research* 67 (1): 75-100.
- Salmon, Wesley C. 1967. *The Foundations of Scientific Inference*. Pittsburgh: University of Pittsburgh Press.
- Sober, Elliott. 1975. *Simplicity*. Oxford: Clarendon Press.
- Whitcomb, Dennis. 2008. Williamson on Justification. *Philosophical Studies* 138 (2): 161-168.
- Williamson, Timothy. 2000. *Knowledge and Its Limits*. New York: Oxford University Press.
- . 2007. *The Philosophy of Philosophy*. Malden, MA: Blackwell.