

De Re Beliefs and Evidence in Legal Cases

by

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ABSTRACT

For the past half-century, both jurisprudence and epistemology have been haunted by questions about why individual evidence (i.e., evidence which picks out a specific individual) can sufficiently justify a guilty or liable verdict while bare statistical evidence (i.e., statistical evidence which does not pick out a specific individual) does not sufficiently justify such a verdict. This thesis examines three popular justifications for such a disparity in verdicts – Judith Jarvis Thomson’s causal account, Enoch et al.’s sensitivity account, and Sarah Moss’ knowledge-first account, before critiquing each in turn. After such an analysis, the thesis then defends the claim that legal verdicts require the factfinder (e.g., the judge or jury) to have a justified *de re* belief (i.e., a belief about a specific object – namely the defendant), and that this doxastic requirement justifies the disparity in rulings, as it is epistemically insufficient to justify a *de re* belief based on bare statistical evidence alone. A brief account of how these beliefs are formed and spread is also given. After making such a distinction, the thesis then formalizes the burdens of proof of the preponderance of the evidence and beyond a reasonable doubt using the *de re/de dicto* distinction. Finally, the thesis pre-empts possible objections, namely by providing an account of DNA evidence as individual evidence and giving an account of how false convictions can occur on the *de re* view of legal proof.

To all those who have been convicted based on spurious, insufficient, or irrelevant
evidence.

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CHAPTER 1

INTRODUCTION

This thesis incorporates elements from disparate academic fields, including philosophy of law, jurisprudence, epistemology, and philosophy of language. So that readers do not end up, like the eldest son of Florence, lost in the obscurity of the work, “the right way having been lost,”¹ it is necessary to outline the course of the opening chapter. The introduction contains five sections. The first introduces a legal and philosophical puzzle – namely, that our intuitions about what evidence counts as sufficient to convict a defendant is at odds with the legal standards around evidence and proof. Afterward, in the second section, I explain key terms and concepts. The third section briefly outlines some of the main approaches that others have taken in trying to tackle the issue at hand, while the fourth section explains why certain groups of people should care about the puzzle. Finally, the fifth section sketches the course of the rest of the thesis.

Introduction to the Disparity

In a court of law, the *burden of proof* is an epistemic standard that a claim must meet for it to be established as a legal fact.² In civil cases, the most common burden of proof is called the *preponderance of the evidence*. A claim meets the preponderance of the evidence when “the party with the burden convinces the fact finder [e.g., the judge or

¹ Dante Alighieri, *La divina commedia* Canto I, Line 3 (Milan: Mondadori, 1967). Accessed via http://www.letteraturaitaliana.net/pdf/Volume_1/t317.pdf

² Wex Legal Dictionary, “Burden of Proof,” Legal Information Institute, Cornell, https://www.law.cornell.edu/wex/burden_of_proof

the jury] that there is a greater than 50% chance that the claim is true.”³ More formally, the preponderance of the evidence can be defined as follows:⁴

Preponderance of the Evidence:

A hypothesis h meets the burden of proof of the preponderance of the evidence if and only if $P(h|e) > .5$, where e “denotes the admissible and available evidence in court.”⁵

Yet curiously, there are cases in which the probability of a fact is insufficient to cause a given claim to be treated as meeting the preponderance of the evidence standard. One of the oldest examples of such a curiosity is generally referred to as the *Red Cab Case*. Philosophical literature has presented two different versions of the so-called Red Cab Case:⁶

*Red Cab Case – Version A:*⁷

“Mrs. Smith was driving home late one night. A taxi came towards her, weaving wildly from side to side across the road. She had to swerve to avoid it; her swerve took her into a parked car; in the crash, she suffered two broken legs. Mrs. Smith therefore sued Red Cab Company. Her evidence is as follows: she could see that it was a cab which caused her accident by weaving wildly across the road, and there are only two cab companies in town, Red Cab (all of whose cabs are red) and Green Cab (all of whose cabs are green),”⁸ and a bystander to the accident testifies that the cab was Red. However, the bystander is “imperfectly reliable... she is roughly 70 percent reliable in matters such as this one.”⁹ Smith herself was unable to determine the color of the cab.

³ Wex Legal Dictionary, “Preponderance of the Evidence,” Legal Information Institute, Cornell, https://www.law.cornell.edu/wex/preponderance_of_the_evidence

⁴ Michael Blome-Tillmann defines the preponderance of the evidence as such in “Sensitivity, Causality, and Statistical Evidence in the Court of Law” *Thought* 4 (2015): 102-12, 102.

⁵ *Ibid.*

⁶ The following cases are taken from David Enoch, Levi Spectre, and Talia Fisher, “Statistical Evidence, Sensitivity, and the Legal Value of Knowledge,” *Philosophy & Public Affairs* 40, no. 3 (2012): 197-224, 197-8.

⁷ The use of “Smith” as the person in the thought experiment comes from Judith Jarvis Thomson, “Liability and Individualized Evidence,” *Law and Contemporary Problems* 49, no. 3 (Summer 1986): 199-219, 199.

⁸ Judith Jarvis Thomson, “Liability and Individualized Evidence,” *Law and Contemporary Problems* 49, no. 3 (Summer 1986): 199-219, 199.

⁹ Enoch, Spectre, and Fisher, “Statistical Evidence,” 197.

In similar cases decided based upon this type of evidence, courts generally rule in favor of the plaintiff. So far, this result conforms with the definition of the preponderance of the evidence. The probability that the cab was red is .7, and thus the probability that the cab belonged to the Red Cab Company is also .7. If we let l stand for the proposition that the Red Cab Company is liable for Smith's accident, then $P(l|e) > .7$. Yet by tweaking the facts of the case, one can reach a counter-intuitive conclusion.

Red Cab Case – Version B:

“Mrs. Smith was driving home late one night. A taxi came towards her, weaving wildly from side to side across the road. She had to swerve to avoid it; her swerve took her into a parked car; in the crash, she suffered two broken legs. Mrs. Smith therefore sued Red Cab Company. Her evidence is as follows: she could see that it was a cab which caused her accident by weaving wildly across the road, and there are only two cab companies in town, Red Cab (all of whose cabs are red) and Green Cab (all of whose cabs are green),”¹⁰ and on the night of the accident, 70% of the cabs operating on the street on which the accident occurred were owned by the Red Cab Company. Smith was unable to discern the color of the cab, and no bystanders have come forth to testify.

Curiously, in cases decided based on this type of evidence, courts generally rule in favor of the defendant. For example, in *Smith v. Rapid Transit Inc.*, the case upon which the Red Cab Case was originally modeled, Rapid Transit “had the sole franchise for operating a bus line”¹¹ on the street on which the accident took place, “this did not preclude private or chartered buses from using this street; the bus in question could very well have been one operated by someone other than the defendant.”¹² In the actual case of *Smith v. Rapid Transit*, the statistics favor Smith more than the statistics in the B Version

¹⁰ Thomson, “Liability and Individualized Evidence,” 199.

¹¹ *Smith v. Rapid Transit Inc.*, 317 Mass. 469, 58 N.e.2d 754 (1945), on 470. Accessed at <http://masscases.com/cases/sjc/317/317mass469.html>

¹² *Ibid.*

of the Red Cab Case, since in the case of *Smith v. Rapid Transit*, there was no licensed competitor analogous to the Green Cab Company in the Red Cab Case. Previous precedent had already established in *Sargent v. Massachusetts Accident Company* that “[i]t has been held not enough that mathematically the chances somewhat favor a proposition to be proved.”¹³ Rather, “[a]fter the evidence has been weighed, that proposition is proved by a preponderance of the evidence if it is made to appear more likely or probable in the sense that actual belief in its truth, derived from the evidence, exists in the mind or minds of the tribunal notwithstanding any doubts that may still linger there.”¹⁴

The Red Cab Case is not the only instance in which the disparity in verdicts between equally probable cases occurs. Another famous example, called the *Gatecrasher Case*, also features such a disparity. Much like the Red Cab Case, the *Gatecrasher Case* comes in two versions, as outlined below:

Gatecrasher Case – Version A: “The organizers of the local rodeo decide to sue John for gatecrashing their Sunday afternoon event. Their evidence is as follows: John attended the Sunday afternoon event — he was seen and photographed on the main ranks. No tickets were issued at the entrance, so John cannot be expected to prove that he bought a ticket with a ticket stub. However, a local police officer observed John climbing the fence and taking a seat. The officer is willing to testify in court.”¹⁵ However, due to the chaos of the event, the officer’s testimony is somewhat, but not entirely reliable, such that the posterior probability of liability, given the officer’s testimony, is .7.

In Version A of the *Gatecrasher Case*, the judge would likely rule in favor of the rodeo — i.e., in favor of the plaintiff. Given that the charge is civil in nature, the ruling is

¹³ *Sargent v. Massachusetts Accident Company*, 307 Mass. 246 (1940), at 250. Accessed at <http://masscases.com/cases/sjc/307/307mass246.html>

¹⁴ *Ibid.*

¹⁵ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 103.

in line with the preponderance of the evidence. However, in the B Version of the case, things change:

Gatecrasher Case – Version B: “The organizers of the local rodeo decide to sue John for gatecrashing their Sunday afternoon event. Their evidence is as follows: John attended the Sunday afternoon event — he was seen and photographed on the main ranks during the event. No tickets were issued at the entrance, so John cannot be expected to prove that he bought a ticket with a ticket stub. However, while 1,000 people were counted in the seats, only 300 paid for admission.”¹⁶ Moreover, John “was prevented by death from giving evidence on his own behalf and the relentless management pursued the case against his estate,”¹⁷ and so the court receives no testimony on his behalf.

Much like the B Version of the Red Cab Case, “our intuitions of justice revolt against the idea that the plaintiff should be awarded judgment”¹⁸ in the B Version of the Gatecrasher Case. After all, the precedent in *Sargent v. Massachusetts Accident Company* still applies – statistical probability alone is deemed insufficient to motivate a liable verdict.

This disparity in ruling is not only limited to civil cases. Criminal cases differ from civil cases in that the burden of proof used in criminal cases is stricter. Most commonly, criminal cases use a burden of proof called *beyond a reasonable doubt*. Such a standard maintains that a judge or jury can find the defendant guilty only if the prosecution convinces the jury that “here is no other reasonable explanation [besides guilt] that can come from the evidence presented at trial.”¹⁹ While such a definition does not contain a phrase such as “more likely than not” which allows for the definition to

¹⁶ Blome-Tillman, “Sensitivity, Causality, and Statistical Evidence,” 103.

¹⁷ L. Jonathan Cohen, “Subjective Probability and the Paradox of the Gatecrasher,” *Arizona State Law Journal* 2, no. 2 (1981): 627-634, 627, footnote 2.

¹⁸ *Ibid.*

¹⁹ Wex Legal Dictionary, “Beyond a Reasonable Doubt,” Legal Information Institute, Cornell, https://www.law.cornell.edu/wex/beyond_a_reasonable_doubt

easily be formalized in probabilistic terms, such a standard “is often glossed as around 90 or 95 percent probability of guilt given the evidence.”²⁰ For sake of simplicity, I will assume that “beyond a reasonable doubt” equates to a 90 percent likelihood. After all, if an event is over 95 percent probable, given a certain body of evidence, then it necessarily is over 90 percent probable given that same body of evidence. Thus, the formalization of the burden of proof is as follows:

Beyond a reasonable doubt: A hypothesis h is proven beyond a reasonable doubt if and only if $P(h|e) > .9$, where e “denotes the admissible and available evidence in court.”²¹

Yet such a definition has its own counterexamples like the Red Cab and Gatecrasher cases. One such pair of examples is inspired by Nesson’s²² *Prisoners* example:²³

Prisoners – Version A: One hundred prisoners are in a courtyard when one of them overpowers and kills a guard.²⁴ A second guard, watched the event unfold but was unable to intervene, claims that a prisoner named Stevens carried out the attack. While the shock of the attack would render most observers unreliable, prison guards are trained to remain calm in such situations. Thus, while the second guard’s testimony is not perfect, he is nonetheless remarkably accurate in such scenarios – 99 percent reliable, in fact. Based on this and no other evidence, the prison charges Stevens with murder.

In such a case, the remarkable accuracy of the second guard’s eyewitness testimony would render the probability of guilt, given the evidence, at .99, and thus

²⁰ Georgi Gardiner, “The Reasonable and the Relevant: Legal Standards of Proof,” *Philosophy and Public Affairs* 47, no. 3 (2019): 288-318, 289.

²¹ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 102.

²² Charles R. Nesson, “Reasonable Doubt and Permissive Inferences: The Value of Complexity” *Harvard Law Review* 92, no. 6 (1979): 1187-225.

²³ Marcello di Bello, “Trial by Statistics: Is a High Probability of Guilt Enough to Convict?” *Mind* 128, no. 512 (2019): 1045-84.

²⁴ No one was harmed in the creation of this thought experiment.

sufficient for conviction. A guilty verdict would thus be expected. The B Version of *Prisoners* is quite like the A Version:

Prisoners – Version B: “One hundred prisoners are in a yard under the supervision of a guard. At some point, ninety-nine of them collectively kill the guard. Only one prisoner refrains, standing alone in a corner. We know this from a video recording. The video shows that the participation ratio is 99:1, but does not allow for the identification of the ninety-nine killers”²⁵ thanks to the low resolution of the video recording. While there is no further evidence, the prison decides, after the fact, to charge a specific prisoner, Jones, with murder.

Here, much like the B versions of the Red Cab and Gatecrasher cases, there is likely to be reluctance to rule in favor of the prosecution despite the probabilities meeting the burden of proof. The probability that Jones partook in the murder is .99, which meets even the more restrictive .95 threshold associated with “beyond a reasonable doubt.”

Some Words on Terminology

Existing literature on evidential standards in legal cases distinguishes between two types of evidence. Eyewitness testimony like that in the A versions of the Red Cab Case, Gatecrasher Case, and Prisoners, is an example of what is referred to as *individual evidence*.²⁶ While the precise properties of individual evidence are contested, what makes this kind of evidence *individual* is the fact that they (ostensibly) specifically pick out the defendant. The eyewitness testimony in the A Version of the Red Cab Case counts as individual evidence because it picks out a given red cab.

On the other hand, the evidence in the B versions of the Red Cab Case, Gatecrasher Case, and Prisoners does not tell us anything about the specific cab involved

²⁵ Di Bello, “Trial by Statistics,” 1045.

²⁶ Thomson refers to such evidence as “individualized” evidence in “Liability and Individualized Evidence,” 203. Nonetheless, this is a mere semantic difference – both “individual” and “individualized” evidence refer to the same thing.

in the accident, person who gatecrashed, or prisoner who abstained from the murder. Because it solely invokes statistics without referring to the specific individual involved, such evidence is often referred to as *bare* or *naked statistical evidence*.²⁷ What makes these statistics *bare* or *naked* is that the statistical probabilities “are not case specific in the sense that the evidence was not created by the event in question but rather existed prior to or independently-of the particular case being tried.”²⁸ Note that such an explanation is insufficient in the Gatecrasher and Prisoner cases, in that the bare statistical evidence in the B versions of these cases are caused by the events in question. Nevertheless, the idea is that bare statistical evidence is insufficient to determine guilt in these cases.

Further complicating the distinction between individual and bare statistical evidence is the fact that statistics are sometimes used to determine the identity of a specific individual. The following example, taken from David H. Kaye and David A. Freedman’s “Reference Guide on Statistics” shows that this is the case with blood samples:

Blood at the Scene of the Crime: “For a stylized example in a criminal case, H_0 is the hypothesis that blood found at the scene of a crime came from a person other than the defendant; H_1 is the hypothesis that the blood came from the defendant; A is the event that blood from the crime scene and blood from the defendant are both type A. Then $P(H_0)$ is the prior probability of H_0 , based on subjective judgment, while $P(H_0|A)$ is the posterior probability—updated from the prior using the data.”²⁹

²⁷ Thomson, “Liability and Individualized Evidence,” 206.

²⁸ Gary L. Wells, “Naked Statistical Evidence of Liability: Is Subjective Probability Enough?” *Journal of Personality and Social Psychology* 62, no. 5 (1992): 739-52, 739.

²⁹ David H. Kaye and David A. Freedman, “Reference Guide on Statistics,” in *Reference Manual on Scientific Evidence: Third Edition* (Washington, D.C.: National Academies Press, 2011): 211-302, 274.

Determining whose blood is present at the crime scene would identify a specific person, and thus would be considered individual evidence. Yet to determine whose blood it is, statistical analysis, more specifically an application of Bayes' Theorem, is necessary. One must import specific statistics, such as the statistic that "Type A blood occurs in 42% of the population,"³⁰ to determine the probability that the blood at the scene of the crime came from the defendant. As such, the existence of blood at the scene of the crime is also statistical evidence. Yet while the base rate of Type A blood in the population is bare statistical evidence, the blood itself has an individuating element, namely that its existence individuates the defendant.

Gary L. Wells conducted the first notable experiment demonstrating that most laypeople and judges would refuse to assign liability in cases invoking bare statistical evidence, even if the probability of liability given the bare statistical evidence meets the preponderance of the evidence.³¹ The widespread reluctance to rule for civil plaintiffs or criminal prosecutors based on bare statistical evidence which raises the probability of liability or guilt beyond the burden of proof is thus named the *Wells Effect* in his honor.³²

The question about whether it is rational to rule for the plaintiff in the A Version of the Red Cab Case while ruling for the defendant in the B Version is often generalized into a question about whether one should convict in cases based on individual evidence while acquitting cases based on bare statistical evidence. This ties into related questions, such as whether there is a certain property of individual evidence which makes individual

³⁰ Kaye and Freedman, "Reference Guide on Statistics," 275.

³¹ Wells, "Naked Statistical Evidence," 742.

³² Di Bello, "Trial by Statistics," 1046, footnote 2.

evidence preferable to bare statistical evidence *ceteris paribus*, whether it is rational to hold the Wells Effect, and whether extremely probable bare statistical evidence is sufficient to deliver a guilty verdict. The following section briefly outlines the main camps into which one can fall on this issue, as well as the main strategies one can use to argue for one camp or the other. The main question of the thesis is thus what, if anything, can justify the disparity in verdicts between cases involving individual evidence and cases which rely solely on bare statistical evidence. This account should not be circular – it should not assume that the disparity in verdicts is rational as a premise in the arguments justifying its rationality.

Two Types of Approaches, Various Strategies

The two main approaches to Red Cab-like cases are referred to as the *conservative* and *revisionist* approaches.³³ The conservative approach claims that we ought to conserve our initial disparity in judgement between the case which uses individual evidence and the case which uses only bare statistical evidence. On the other hand, the revisionist approach claims that our disparity in judgement between the two types of cases is flawed, and that we ought to revise our judgments, either by finding the defendant liable in both types of cases or by not finding him liable in either.

In trying to answer why the law should treat cases in which there is individual evidence differently than cases in which there is merely pure statistical evidence, existing

³³ Michael Blome-Tillmann, “‘More Likely Than Not’ Knowledge First and the Role of Bare Statistical Evidence in Courts of Law,” in *Knowledge First - Approaches in Epistemology and Mind*, (Oxford, UK: Oxford University Press, 2017): 278-292, 4. Note that the pagination of the article as present on PhilPapers does not match the pagination in the book. To avoid confusion, any further citations of the work will refer to the PhilPapers pagination.

literature invokes various types of concerns to argue for the conservative or revisionist approach. These types of concerns generally fall into three different categories. First, one could claim that there is a *practical* or *pragmatic* concern that justifies the disparity in verdicts. These types of concerns deal with “instrumental reasons having to do with institutional features, with administrative costs, with differential incentives, and so on,”³⁴ which might justify preferring individual evidence over purely statistical evidence, even if the two types of evidence raise the probability of liability or guilt to the same degree. For example, Charles Nesson argues that part of the function of the legal system is to resolve disputes in ways that the public will accept as authoritative.³⁵ Ruling in favor of the prosecution in the B version of Prisoners would undermine general confidence in the legal system as authoritative, he claims, because quantification of beyond a reasonable doubt would “undercut a central feature of the concept of reasonable doubt, namely its utility in legitimating the imposition of criminal blame and punishment.”³⁶

Second, one might argue that there is a *moral* reason which justifies the disparity in rulings. For example, David T. Wasserman holds that one reason why bare statistical evidence may be morally objectionable is that reliance on bare statistical evidence ³⁷treats the defendant “as someone randomly selected from the crowd.” This treatment, he claims, is “inconsistent with the law’s commitment to treat the defendant as an autonomous individual, free to determine and alter his conduct at each moment.”³⁸

³⁴ Enoch, Spectre, and Fisher, “Statistical Evidence,” 201.

³⁵ Nesson, “Reasonable Doubt and Permissive Inferences,” 1194.

³⁶ *Ibid.*, 1196.

³⁷ David T. Wasserman, “The Morality of Statistical Proof and The Risk of Mistaken Liability” *Cardozo Law Review* 13 (1991): 935-76, 943.

³⁸ *Ibid.*

Judith Jarvis Thomson presents another argument based in part on morality by appealing to the principle that it is unjust to convict someone “unless one believes one has good reason to believe that he is guilty, and therefore deserves the penalty.”³⁹ This is a relevant moral consideration, she claims, because unlike bare statistical evidence, individual evidence comes with a sort of epistemic “guarantee” which allows the person who has such a guarantee to have the appropriate type of certainty needed for conviction.⁴⁰ Thus, Thomson’s argument is not purely moral, but also includes a third type of concern – epistemic concerns. Arguments based on epistemic concerns claim that there is something about individual evidence that is epistemically preferable to bare statistical evidence, even if the probability of a proposition being true is equal in both cases.

Thomson’s argument in favor of the disparity in ruling based on epistemic concerns is far from the only one. Enoch, Spectre, and Fisher provide an argument that is based on the notion of sensitivity. S’ belief in p is sensitive if and only if “[h]ad it not been the case that [p], S would... not have believed that [p].”⁴¹ The beliefs caused by the A scenarios are sensitive, they claim, because had it not been the case that the defendants were liable (or guilty in criminal cases such as Prisoners), then the individual evidence would not have been available.⁴² On the other hand, because the bare statistical evidence available in the B versions would have been available even if the defendants were not liable, they claim that beliefs based on bare statistical evidence are not sensitive. Not only

³⁹ Thomson, “Liability and Individualized Evidence,” 213.

⁴⁰ *Ibid.*, 211-3. The chicken in the icebox example is the best illustration she gives of this claim.

⁴¹ Enoch, Spectre, and Fisher, “Statistical Evidence,” 204.

⁴² *Ibid.*, 206-7.

do Enoch et al view sensitivity as epistemically important, but as pragmatically important as well, claiming that the type of counterfactual thinking involved in sensitivity incentivizes following the law.⁴³

Most recently, knowledge-first epistemology has seen some use in justifying the disparity. One such example of a knowledge-first approach occurs in Michael Blome-Tillmann's "More Likely Than Not." Blome-Tillmann argues that what is implicit in burdens of proof is a knowledge requirement, so that instead of a mere statistical probability sufficing for conviction, what matters is the probability that a trier of fact knows p given evidence e , rendered as " $P(Kp|e) > .5$ "⁴⁴ in civil cases involving the preponderance of the evidence.

A more recent example of a knowledge-first answer to the disparity comes from Sarah Moss, who argues that "legal proof requires knowledge."⁴⁵ In her view, meeting the burden of proof "requires the factfinder to have at least a certain amount of credence in"⁴⁶ a given fact, and that this credence constitute knowledge. Thus, for example, a fact meets the preponderance of the evidence if a judge's credence in fact exceeds .5, and the judge's credence does constitute knowledge.

Why Should We Care?

One further question about the thesis involves to what extent the thesis is important, or why the types of questions that the thesis deals with should concern

⁴³ Enoch, Spectre, and Fisher, "Statistical Evidence," 220-3.

⁴⁴ Blome-Tillmann, "More Likely Than Not," 7.

⁴⁵ Sarah Moss, "Knowledge and Legal Proof": 1-37, 2, accessed via <http://www-personal.umich.edu/~ssmoss/Moss%20-%20Knowledge%20and%20Legal%20Proof.pdf>

⁴⁶ Ibid., 12.

philosophers. Different types of philosophers would have different reasons to care about the thesis.

This thesis deals primarily with the epistemic approach, and to that end, there are a few reasons why epistemologists should care about the questions posed by the thesis. First, other types of approaches invoke epistemic differences between individual and bare statistical evidence in their justification. As noted above, Enoch et al view the epistemic concern of sensitivity as grounding an important pragmatic reason for maintaining the disparity. The legal approach is philosophically insufficient not only because appealing to precedent is generally insufficient to justify philosophical argument, but also because the specific rulings upon which the precedent is based invoke epistemic concerns in their briefs. Because the legal precedent is justified on epistemic grounds, the legal approach must invoke epistemic concerns in its argument. Furthermore, moral concerns in these types of cases would not be relevant unless there is some epistemic difference between the two types of evidence. The claim that it is better that five guilty men go free than one innocent man be imprisoned would not be a definitive reason to justify the disparity in verdicts unless there is an epistemic reason justifying it, since the probability of guilt (or liability in civil cases) is equal in both versions of the case. The moral concern that one should not convict a defendant on a criminal charge unless the evidence meets the standard of proof beyond a reasonable doubt is insufficient to justify the disparity in verdicts unless one can show that one version of the case meets the burden of proof while the other does not.

A second reason for epistemologists to care about the thesis is that gatecrasher-like cases have analogues in epistemology which do not invoke the law. Enoch et al provide a modified example of the Lottery Paradox, which I will designate as *Lottery Case – A Version*:

Lottery Case – A Version: You buy a ticket for a lottery with one in one thousand odds. “You hold on to it for a day. Now the winning ticket has been picked, and you find the winning numbers in today’s newspaper. Your ticket’s numbers are not there. Newspapers are pretty reliable on such matters, but not, of course, infallible. Let us suppose that factoring in all the probabilistically relevant information... the probability that your ticket nevertheless won is one in a million.”⁴⁷

In such an example, Enoch et al assume that the ticketholder knows his ticket did not win. However, an example of the lottery paradox more akin to the original does not constitute knowledge:

Lottery Case – B Version: You buy a lottery ticket where the initial probability of winning is one in a million. “The winning ticket has been picked, but you receive no indication about the results.”⁴⁸

In this example, the consensus is that the ticketholder does not know that his ticket lost, even though the probability that the ticketholder lost in the B version is equal to the probability that the ticketholder lost in the A version. The stipulated difference between the two versions of the case is much like the stipulated difference between the A and B versions of Red Cab, Gatecrasher, and Prisoners: that while in the A version, the ticketholder has access to individual evidence, he only has access to bare statistical evidence in the B version.

⁴⁷ Enoch, Spectre, and Fisher, “Statistical Evidence,” 202.

⁴⁸ Ibid.

Philosophers of mind, on the other hand, may have a different reason to care about the thesis – namely, that the Wells Effect posits interesting questions about the structure of the mind. Answering why people are predisposed to prefer individual evidence over bare statistical evidence may shed light on related questions about the nature of information processing in the mind.

From the point of view of philosophy of law, the thesis may cause some to reevaluate or interrogate the assumptions, both descriptive and normative, that lie behind the existing legal precedent and rules of evidence. Answering to what extent the Wells Effect is epistemologically justified may inform questions about what verdicts normatively *should* occur in certain types of court cases. This is reflected genealogically in the literature – legal scholars such as Nesson were writing on the topic years before it piqued the interest of academic philosophy.

Overview of the Thesis

Finally, the introductory chapter would be incomplete without a brief overview of the rest of the paper. The thesis will include four chapters, including this one. The first, as should be obvious, is the introductory chapter. The second chapter will provide a relatively brief account of some existing theories on why one might prefer individual evidence over bare statistical evidence. Given the wealth of the literature, the second chapter will deal mainly with Thomson, Enoch et al, and Moss. The selection of these three is not arbitrary; the three represent three different epochs in which philosophers have dealt with the questions regarding evidentiary standards in the law. Thomson was the first major philosopher who imported the questions from jurisprudence to the

philosophy of law. Enoch et al revitalized the debate around these questions after a relative lull in the philosophical literature. Finally, Moss' article is the most contemporary of the three and is an exemplar of the fruits of the revitalized debate. Furthermore, all three articles fall within the realm of epistemology to varying degrees. Given that the thesis concerns itself primarily with epistemology, non-epistemological approaches to the questions can somewhat be ignored due to space considerations.

In the third chapter, I present objections to the three in turn. While some of these objections are already present in the literature, some are novel, and thus form the first part of the thesis that goes beyond exegesis. Finally, in the fourth chapter, I present my own solution to the problem – namely, that the salient difference between individual and statistical evidence is that the former individuates the defendant *de re*, while the latter does not do so.

CHAPTER 2

LITERATURE REVIEW

Thomson's "Liability and Individualized Evidence"

Defining Individualized Evidence

Thomson claims that the distinguishing relevant feature of individual evidence is that individual evidence, unlike bare statistical evidence, "is in an appropriate way causally connected with the (putative) fact that the defendant caused the harm."⁴⁹ She specifies two different types of causal connections which individual evidence might have. First, *backward-looking individualized evidence* is individual evidence which "points back towards the (putative) fact"⁵⁰ that the defendant is liable or guilty. For example, the eyewitness testimony in the A version of the Red Cab Case would constitute backward-looking individualized evidence because the eyewitness perception that the cab was red was (ostensibly) caused by the cab's red color. Because the cab's color (ostensibly) causes the eyewitness perception, the individualized evidence can be used to "look back" on the causal chain of events to determine the cab's color.

Backward-looking individualized evidence differs from a second type of individualized evidence, called *forward-looking individualized evidence*. Forward-looking individualized evidence is individualized evidence which "points forward towards the (putative) fact that"⁵¹ the defendant is guilty. As an example, Thomson imagines that the Red Cab Company had held a party for its drivers on the night of the

⁴⁹ Thomson, "Liability and Individualized Evidence," 203.

⁵⁰ *Ibid.*

⁵¹ *Ibid.*

crash which devolved into a drunken brawl. The evidence that this party had occurred would be forward-looking because the drunken nature of the party “would causally explain its having been a Red Cab which caused the accident.”⁵² So while the cab’s red color causes the eyewitness to perceive the cab as red, the drunken party causes one of the drivers to get into the accident later that night. The evidence of the party can thus be used to “look forward” on the causal chain of events to determine that the Red Cab Company was at fault.

Thus, in the A version of the Red Cab Case, there is backward-looking individualized evidence but not forward-looking individualized evidence. The eyewitness perceives the cab as red, if the cab were red, this would causally explain this perception, so the evidence points back on the causal chain.⁵³ It is important to underscore that the evidence is evidence for a *hypothesis*, and not sufficient for deductive proof. For example, the eyewitness could misperceive the color of the cab – he is, after all, stipulated to be imperfect. Thus, the perception that the cab was red is compatible with the cab being green (assuming a misperception).

Furthermore, “different bits of individualized evidence may differ in strength.”⁵⁴ For example, Thomson claims that it is possible for a privately-owned car to have caused the crash. The more privately-owned cars on the road there are, “the less weight we are entitled to place on the causal hypothesis that Mrs. Smith's believing it was a cab which caused her accident was caused by its being a cab which caused her accident, and thus the

⁵² Thomson, “Liability and Individualized Evidence,” 203.

⁵³ *Ibid.*, 204.

⁵⁴ *Ibid.*

less weight her believing it was a cab which caused her accident lends to the causal hypothesis that it was a cab which caused her accident.”⁵⁵ Nonetheless, the perception that a cab was the offending vehicle is backward-looking individualized evidence in that the perception “would be causally explained by its having been a cab which caused her accident.”⁵⁶

Moreover, individual evidence cannot be used to justify hypotheses which are not present in the evidence. For example, from Mrs. Smith’s perception that a cab caused the accident alone, one cannot justify the claim that a *red* cab specifically caused the accident.⁵⁷ Her perception alone is thus not backward-looking individualized evidence that a *red* cab caused the accident, but merely backward-looking individualized evidence that a cab caused the accident. Rather, the additional evidence that the bystander believed that the cab was red is needed to justify the claim that a *red* cab caused the accident.

Furthermore, for individualized evidence to be sufficient to justify a liable verdict, the evidence must pick out features which distinguish the defendant from other possible actors.⁵⁸ In the A version of the Red Cab Case, this is stipulated to be the redness of the cab. In the B version of the Red Cab Case, however, there is no bystander testimony, and thus no individual evidence which picks out the Red Cab Company specifically as the liable party. In the B version, there *is* individual evidence – namely Mrs. Smith’s perception that the automobile was a cab. But the individual evidence does not suffice to pick out Red Cab Company specifically.

⁵⁵ Thomson, “Liability and Individualized Evidence,” 204.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*, 205.

When trying to answer why the addition of individualized evidence makes people more likely to assign liability, Thomson rules out the claim that the individual evidence raises the probability of liability – after all, the reluctance occurs in the B version of the Red Cab Case even though the probability of liability is equal to the probability of liability in the A version.

Epistemic Guarantees

Thomson next turns to epistemic problems. While first giving the standard definition of knowledge as justified true belief, she remarks that the controversy regarding this definition stems from the fact that it is unclear “what is required for A to have a reason which is good enough for it to be true that”⁵⁹ A satisfies the justification requirement. What Thomson argues, however, is that the fact that A is rationally entitled to conclude that *p* is highly probable is insufficient for A to satisfy the justification requirement for knowledge.⁶⁰ To argue this, Thomson imagines a lottery scenario much like the B version of the Lottery Paradox, in which Alfred knows that Bert holds 5 percent of available tickets to a lottery but has no further information about the lottery. Because Alfred is rationally permitted to conclude that Bert’s chance of losing the lottery is .95, he does so. This justifies his belief that Bert will lose the lottery, and as it so happens it is the case that Bert will lose. Yet Thomson claims Alfred does not know that Bert will lose – “[t]here is something missing in Alfred, something the lack of which makes it false to say he knows that Bert will lose.”⁶¹ It is not that the probability is

⁵⁹ Thomson, ‘Liability and Individualized Evidence,’ 207.

⁶⁰ Ibid.

⁶¹ Ibid.

insufficiently high; one lacks knowledge even in the original B version of the Lottery Case, in which the probability of losing is 999,999 in 1,000,000.

What Alfred lacks, Thomson claims, “is something which would make it not be just luck for him that Bert will lose the lottery.”⁶² This further component which makes Alfred’s belief more than lucky is that “A’s reason for believing that p is true must ensure, or *guarantee*, that p is true.”⁶³ Thomson contrasts Alfred with a different case, in which Bertha buys a ticket to a lottery. Unbeknownst to Bertha, but known to her friend Alice, “the ticket seller tore up her ticket stub directly after selling it to her.”⁶⁴ Alice thus believes that Bertha will lose the lottery, and it turns out to be the case that she does, because Bertha’s loss “*was caused by* the ticket seller’s tearing up her stub.”⁶⁵ The fact which justified Alice’s belief was thus the same fact which caused, and guaranteed Bertha’s loss. Because of this causal connection, the claim that Alice knew that Bertha would lose is far more plausible than the claim that Alfred knew that Bert would lose.

Thomson then considers another example, in which Arthur believes that he is seeing a chicken in front of him.⁶⁶ If it turns out that there was, in fact, a chicken in front of him, this fact about the chicken “*was causally necessary* for his having that visual impression, then his having that visual impression guaranteed that there was a chicken in front of him.”⁶⁷

⁶² Thomson, “Liability and Individualized Evidence,” 208.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Ibid., 209.

⁶⁷ Ibid.

At this point, Thomson focuses on the conditions under which assertions of knowledge are permissible. To say that one knows *p*, on her view, also comes with a moral obligation, given that the saying that one knows *p* is a particularly emphatic way to give one's word that *p* is true.⁶⁸ To argue for this, Thomson returns to Alfred and Bert, imagining that the lottery works in the following strange manner: "the winner must prove he is the winner by producing his ticket, or he must wait six months for his prize, during which time the lottery organizers will assure themselves that he is who he says he is."⁶⁹ Alfred offers to buy the tickets off Bert, telling Bert that he knows the tickets will lose. If Bert were to accept Alfred's offer, then he runs the risk of losing out on six months of interest on the winnings. Even though Bert's tickets will not win, Thomson claims that it is unacceptable for Alfred to assert that he knows the tickets will lose, because the statistical evidence does not have the epistemic "guarantee" that would justify such an assertion.

What Alfred implies when he tells Bert "I know you will lose" is that Alfred has access to some information (e.g., some insider information about rigging) beyond the mere statistical probabilities that the lottery has.⁷⁰ Generalizing from this example, Thomson concludes "that if A is aware that B will suffer a loss if he relies on the truth of *p* where *p* is not true, then A ought not say to B "I know that *p* is true" unless A is more or less sure that he has a guarantee that *p* is true."⁷¹ A should instead say something which does not imply access to such evidence – for example, by saying "It is probable

⁶⁸ Thomson, "Liability and Individualized Evidence," 209.

⁶⁹ *Ibid.*, 210.

⁷⁰ *Ibid.*

⁷¹ *Ibid.*, 211.

that p is true.” For Thomson, asserting that p is true requires that one be “more or less sure less sure that it would not be just luck for one if p turns out to be true.”⁷² The phrase “more or less sure” is inserted because circumstances differ. In normal-stakes scenarios, the threshold for what counts as a sufficient guarantee are more lenient than the threshold would be in higher stakes scenarios.⁷³ Even so, the threshold for a guarantee sufficient to warrant asserting “I know that p is true” is quite high even in normal circumstances, especially when compared to the threshold for other assertions (e.g., “I believe p is quite probable”).

Given that there is such a high requirement for what constitutes an acceptable guarantee, one might question what the point of asserting that p is true is. Yet just as there are cases in which one has quite a lot to lose if one accepts false assertions, so too are there cases in which there is much to gain from heeding true assertions. If my roommate asks me if I have anything to eat, and I tell him that I know that I have leftovers from last night’s dinner, my roommate stands to gain if he follows my advice. Thus, the balancing of asserting and omitting assertion is a delicate one that a competent speaker learns to navigate.

This excursus on knowledge weighs in favor of individualized evidence. In the context of the legal system, the judge or jury taking the speech act of declaring the defendant liable imposes such liability on the defendant.⁷⁴ And, much as it would be inappropriate for Alfred to assert that he knows Bert’s lottery tickets will lose, simply

⁷² Thomson, “Liability and Individualized Evidence,” 211.

⁷³ *Ibid.*, 212.

⁷⁴ *Ibid.*, 213.

having a true belief would be insufficient for a judge to declare the defendant liable. If, for example, the members of a jury decide the verdict of a trial based on a coin toss, the verdict would be unacceptable even if they happened to be lucky enough to be correct.

The moral line of thought starts from the assumption that a defendant who is not guilty would suffer unjustly were he to be convicted. Thus, it would be immoral to find him guilty “unless one believes one has good reason to believe that he is guilty, and therefore deserves the penalty.”⁷⁵ So a jury which convicts based on a coin toss does so unacceptably, even if the verdict is correct.

A second reason why such impositions of guilt or liability would be unjust is that it was “just luck for them if it actually was the case that the defendant was guilty.”⁷⁶ This reasoning would forbid finding Jones guilty in the B version of Prisoners. Even if the statistics could count as a good reason to find Jones guilty, the imposition of a guilty verdict on Jones would still be a lucky coincidence if he were, in fact, guilty. Thus, what is necessary for conviction is not simply a good reason, but “reason of a kind which would make it not be just luck for the jury if its verdict is true.”⁷⁷

Beyond mathematical probability, what is necessary is the type of guarantee of truth which individual evidence has by virtue of its causal connection “with the (putative) fact that the defendant is guilty.”⁷⁸

Enoch, Spectre, and Fisher: Sensitivity

⁷⁵ Thomson, “Liability and Individualized Evidence,” 213.

⁷⁶ *Ibid.*, 214.

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

After presenting the analogy between their version of the lottery paradox and Red Cab-like cases, Enoch et al hold that the reason why individual evidence is more highly valued than bare statistical evidence is because of sensitivity. This account relies on thinking in terms of counterfactuals.⁷⁹ In the lottery cases they present, this materializes in terms of what beliefs one would have if one's ticket were in fact the winner. In the B version, which relies on bare statistical evidence, one would still have access to all the same information – thus, if one believed that one were going to lose in the original B version, one would still believe that one would lose even if one held the winning ticket. It is otherwise when considering the A version. In the A version, one's belief is in part informed by the newspaper printing a different number than the number on one's ticket. However, if it were true that one held the winning ticket, then in all probability the newspaper would print the number held on one's ticket. And because the newspaper would have printed the matching ticket number, this would lead one to believe that one won. Thus, in the A version of the Lottery Case, had the belief that the ticketholder lost been false, the ticketholder would not have had it. On the other hand, in the B version, had the ticketholder's belief that he lost been false, he would most likely still believe that he had lost.

Enoch et al hold that this attention to counterfactuals is an epistemic good.⁸⁰ Much like Thomson, they stress that having a true belief that one will lose in the B version could just be an “epistemic fluke”⁸¹ – it just happens to be a true belief. On the

⁷⁹ Enoch, Spectre, and Fisher, “Statistical Evidence,” 203.

⁸⁰ *Ibid.*, 204.

⁸¹ *Ibid.*

other hand, beliefs which would not be held if the belief were false are deserving of some epistemic praise. This leads the authors to introduce the notion of sensitivity, defined as follows:

*Sensitivity: S' belief that p is sensitive if and only if "[h]ad it not been the case that [p], [S] would... not have believed that [p]."*⁸²

Thus, the belief that one lost in the A version of the Lottery Case is sensitive, while the belief that one lost in the B version of the Lottery Case is insensitive. One further note about sensitivity is that while other authors insist on sensitivity being a necessary condition for knowledge, Enoch, Spectre, and Fisher merely insist that it is an "epistemological desideratum"⁸³ – that is, *ceteris paribus*, a sensitive belief is epistemologically better than an insensitive one.

The connection between the Lottery Cases and the Red Cab Cases is that Enoch et al argue that the belief that the Red Cab Company is liable in the A version is sensitive, whereas the belief that the Red Cab Case is liable (if one were even to hold such a belief) in the B version is insensitive. While granting that the eyewitness in the A version of the Red Cab Case is imperfect, he is still quite reliable. Thus, if the Red Cab Company were not liable in the A version, then the eyewitness would most likely not have perceived the cab as red.⁸⁴ However, in the B version, the only bare statistical evidence concerns the percentage of Red Cab Company cabs on the relevant road at the relevant time.

Regardless of whether the Red Cab Company is liable in the B version, the statistical evidence remains the same. If the judge in the B version acts in accordance with the

⁸² Enoch, Spectre, and Fisher, "Statistical Evidence," 204.

⁸³ *Ibid.*, 205.

⁸⁴ *Ibid.*, 206.

Wells Effect and finds for the defendant, his belief that the Red Cab Company is not liable would remain even if the Red Cab Company were liable.

Even in the B version of Prisoners, where the probability that Jones partook in the killing is .99, a conviction based on bare statistical evidence would be insensitive, and thus less epistemically desirable than a conviction in the A version of Prisoners.⁸⁵ Strong bare statistical evidence is still epistemically inferior to equally strong individual evidence on this view.

Enoch et al present a related “epistemological vindication”⁸⁶ of the discrepancy in verdicts between the A and B versions of the cases. Suppose that the evidence in the Red Cab Case is misleading – it causes the judge to believe that the Red Cab Company was at fault when the company was not at fault. In the B version of the case, the bare statistical evidence ‘invites a “you win some, you lose some” kind of attitude.’⁸⁷ The judge knew that the statistics showed that 70 percent of the cabs on the road at the time were from the Red Cab Company, so he reasonably could expect to be wrong the other 30 percent of the time. Yet this attitude is inappropriate in the A version of the case. If the eyewitness testifies that the cab was red, when the cab was green, “this discrepancy seems to call for explanation.”⁸⁸ The fact that misleading statistical evidence is less of a surprise than misleading individual evidence, and that a more detailed explanation for how the individual evidence misled is needed to explain that the evidence did so, further justifies the discrepancy in verdicts.

⁸⁵ Enoch, Spectre, and Fisher, “Statistical Evidence,” 207.

⁸⁶ *Ibid.*, 208.

⁸⁷ *Ibid.*

⁸⁸ *Ibid.*

Yet Enoch et al point out that it is one thing to claim that sensitive beliefs are *ceteris paribus* epistemically superior to insensitive beliefs, but quite another to claim that the law should care about producing verdicts based on sensitive beliefs. Even if sensitivity is a necessary condition for knowledge, they ask, why should it “make a legal difference whether a certain belief constitutes knowledge?”⁸⁹ Why should sensitivity matter?

One (at least somewhat uncontroversial) claim is that “[i]t is important that courts not err too often.”⁹⁰ Yet in the types of cases presented, the statistical evidence raises the probability of liability or guilt to the same degree as individual evidence – both types of evidence improve legal accuracy to the same extent. Even if individual evidence makes beliefs based on that evidence sensitive (and thus epistemically superior to beliefs based on bare statistical evidence), what, if anything, makes this a fact of legal importance? If knowledge is held to be an important element of the legal process, then this comes at the price of decreased accuracy, on the grounds that “excluding statistical evidence amounts to excluding (what is often) good, genuinely probative evidence.”⁹¹ To underline this point, Enoch et al come up with the following thought experiment:

“Suppose you have to choose the (criminal) legal system under which your children will live, and you can choose only between systems A and B. System A is epistemologically better: perhaps its courts only convict when they know (or think that they know) the accused is guilty, or perhaps they only convict based on sensitive evidence, or perhaps they convict only based on evidence that normically supports the conclusion that the accused is guilty. System B is not as good epistemically as System A. But System B is more accurate, so that the

⁸⁹ Enoch, Spectre, and Fisher, “Statistical Evidence,” 211.

⁹⁰ Ibid.

⁹¹ Ibid., 212.

chances of System B convicting an innocent are lower than the chances of System A doing so.”⁹²

Those who would choose to live in System A over System B engage in a kind of “epistemological fetishism.”⁹³ This is not to say that Enoch et al believe knowledge has no value to the legal process, but merely that “to the extent that it has value, its value is lexically inferior to that of accuracy.”⁹⁴

One response to this claim might be that legal rulings based on knowledge are preferable because they have higher explanatory value than legal rulings which are not based on knowledge. Thus, legal systems which prioritize knowledge would commit mistakes which can be explained and later rectified, whereas legal systems like System B would commit mistakes which could not be explained. Yet Enoch et al find such a claim insufficient to motivate preferring System A to System B, because the practical harm caused by mistakes that “do not call for explanation,”⁹⁵ that is, mistakes based on statistical evidence, cause just as much harm to the aggrieved party as mistakes which do call for explanation.

Enoch et al point out that they are not claiming that accuracy should be the *sole* concern of the law: in some situations, “other considerations can presumably trump accuracy.”⁹⁶ Rather, their point is weaker – namely, that “*epistemological* considerations never by themselves seem to justifiably defeat considerations of accuracy when it comes

⁹² Enoch, Spectre, and Fisher, “Statistical Evidence,” 212.

⁹³ *Ibid.*, 213.

⁹⁴ *Ibid.*

⁹⁵ *Ibid.*, 214.

⁹⁶ *Ibid.*

to legal policy.”⁹⁷ One further objection to their analysis that Enoch et al consider is that while epistemological considerations alone may never trump accuracy, “it is possible that epistemological considerations defeat considerations of accuracy *indirectly*, via some other considerations to which they are relevant.”⁹⁸ They consider moral attribution of blame as one such example of a consideration which requires knowledge and may have “some close normative connections”⁹⁹ with legal rulings.

While this objection has some initial plausibility, Enoch et al believe that such an objection must answer a whole host of clarifying questions for such an objection to stand up to scrutiny. Namely, Enoch et al ask:

“What moral judgments and attitudes? What kinds of legal findings? Why think that the appropriateness of the relevant moral attitudes depends on epistemological considerations? And why think that it is necessary for the appropriateness of the legal finding?”¹⁰⁰

Leaving aside further exploration of these questions for a later date, Enoch et al conclude by stating that the sensitivity-based explanation of the discrepancy in common intuition regarding individual and bare statistical evidence given so far is one which not a vindication of the validity of the discrepancy of the rulings, but rather merely “merely a diagnosis of the relevant common intuitions and, indeed, as perhaps even the beginning of a debunking explanation of these intuitions.”¹⁰¹ To further justify the discrepancy in rulings, one must defend knowledge as an indirectly relevant concern to the law.

⁹⁷ Enoch, Spectre, and Fisher, “Statistical Evidence,” 214.

⁹⁸ *Ibid.*, 215.

⁹⁹ *Ibid.*

¹⁰⁰ *Ibid.*, 215.

¹⁰¹ *Ibid.*

To give a possible account of this, Enoch et al turn toward character evidence. The reputation of character evidence is mixed, and its unsavory reputation is deserved if the function of the court system is exclusively “finding the truth or making factually accurate decisions.”¹⁰² But Enoch et al cite Sanchirico, who argued that the purpose of admitting character evidence is not aimed at finding the truth or being accurate. Rather, its purpose is to incentivize lawful behavior. Yet this does not fully vindicate character evidence – by the time someone is considering whether to break the law or not, one’s public reputation will already have been established. To incentivize lawful behavior, one would want to tell a would-be criminal that “the likelihood of his being (charged and convicted and) punished strongly depends on whether or not he decides to break the law here and now.”¹⁰³ Because character evidence is already established by the time that the crime occurs, it does not help provide this incentive.

However, while character evidence may not provide incentives to follow the law, the focus on incentivizing lawful behavior points to another discrepancy between individual and statistical evidence. Suppose John finds himself in the B version of the Gatecrasher Case, and is considering whether to gatecrash or to buy a ticket. John can see the others gatecrash but cannot compel them to stop, and thus has access to a rough statistical percentage. But this statistical evidence is already set in stone, and “is only to a miniscule degree influenced by the conclusion of John’s deliberation.”¹⁰⁴ If a court were to consider statistical evidence sufficient for holding him liable, this “annihilates

¹⁰² Enoch, Spectre, and Fisher, “Statistical Evidence,” 216.

¹⁰³ *Ibid.*, 216-7.

¹⁰⁴ *Ibid.*, 217.

whatever incentive the substantive... law can give John not to break the law.”¹⁰⁵ Since the probability of his gatecrashing given the statistical evidence meets the preponderance of the evidence regardless of whether he gatecrashes, he is already damned to be held liable. Thus, “he might as well go ahead and gatecrash.”¹⁰⁶

Enoch et al grant that real legal cases are far more complex than the Gatecrasher Case, and that some real-world complexities may undermine the claim that statistical evidence can undermine incentives to follow the law. For example, individual evidence, such as an alibi, may become available later. Furthermore, in cases like the Red Cab Case, the liable driver does not deliberate over whether to crash into Mrs. Smith’s car – it is an accident, after all. And things get even more murky if character evidence is admitted. If John is already reputed to be a compulsive lawbreaker, then this may further undermine the belief that if he were to refrain from gatecrashing, he would not be charged with a crime. Finally, in some cases, “the deliberating would-be perpetrator knows that if he chooses not to commit the crime, no crime will be committed at all, and so the availability of statistical evidence against him will not be relevant.”¹⁰⁷

Nonetheless, Enoch et al maintain that there is an insufficiency of statistical evidence to incentivize abiding the law in most cases. The modest claim that they make is that “at least one important normative consideration governing the advisability of relying on statistical evidence is the fact that relying on it will render the primary-behavior incentives that the law gives less efficient and accurate than they would otherwise be.”¹⁰⁸

¹⁰⁵ Enoch, Spectre, and Fisher, “Statistical Evidence,” 217.

¹⁰⁶ *Ibid.*, 218.

¹⁰⁷ *Ibid.*, 218-9.

¹⁰⁸ *Ibid.*, 219.

On the other hand, individual evidence, even if it “probabilistically indistinguishable”¹⁰⁹ from statistical evidence, does not come with this cost to incentivizing law-abiding behavior.

What does any of this have to do with sensitivity? As noted earlier, Enoch et al hold that the legal value of sensitivity must be argued for instrumentally. They thus argue that sensitivity is instrumentally valuable because it incentivizes law-abiding behavior. In the A version of the Gatecrasher case, John would think conditionally when deliberating whether to gatecrash when considering claims such as “if I crash the gates, they will punish me. If I do not, they will not.”¹¹⁰ Supposing that he does gatecrash, and the A version of the case occurs, the conditional thought that ““if I do not crash the gates, they will not punish me”¹¹¹ thus becomes the counterfactual claim by the jury that “had he not crashed the gates, we would not have punished him.”¹¹² But this is just the relevant instantiation of sensitivity. Thus, both the epistemic concern and practical concern of incentives to follow the law stem from a common source: sensitivity.

Yet Enoch et al are aware that further argument to show that the two concerns sharing the same source is not mere coincidence. They claim that sensitivity is the reason why we can treat the legal cases such as the Gatecrasher Case and the Lottery Case alike.¹¹³ Sensitivity also explains why individual evidence is practically more beneficial to the legal system without “resorting to knowledge fetishism.”¹¹⁴ What is more

¹⁰⁹ Enoch, Spectre, and Fisher, “Statistical Evidence,” 219.

¹¹⁰ *Ibid.*, 220.

¹¹¹ *Ibid.*

¹¹² *Ibid.*

¹¹³ *Ibid.*, 221.

¹¹⁴ *Ibid.*

important from a legal perspective, they claim, is the pragmatic concern of incentivizing the law. Thus if the pragmatic concern of incentivization is “outweighed by other instrumental considerations,”¹¹⁵ then they argue that the law has no reason not to rely on insensitive evidence. Furthermore, they concede that “the extent of the overlap between the epistemological considerations and the instrumental ones is to a large extent contingent.”¹¹⁶ Nonetheless, they claim that there are other practical considerations against “against relying on (insensitive) statistical evidence even in cases where other instrumental considerations do not suggest so.”¹¹⁷ But if such considerations are absent, then they claim that the law should have no qualms about using insensitive evidence.

Finally, there is a question about to what extent considerations of sensitivity ought to apply to non-legal deliberation. In some contexts, suspicions regarding statistical evidence do not arise, and thus do not require an account like Enoch et al’s. In contexts in which there is such a suspicion (such as in the B version of the Lottery Case), further explanation is necessary. In some contexts, epistemic concerns are the most prevalent, and thus “the epistemological story all by itself explains the relevant suspicion.”¹¹⁸ In nonlegal contexts where the epistemic consideration does not weigh heavily, then Enoch et al hypothesize that there will be pragmatic concerns analogous to legal incentives in that they rely on sensitivity.

Sarah Moss’ “Knowledge and Legal Proof”

Excursus on Probabilistic Knowledge

¹¹⁵ Enoch, Spectre, and Fisher, “Statistical Evidence,” 221.

¹¹⁶ *Ibid.*, 222.

¹¹⁷ *Ibid.*

¹¹⁸ *Ibid.*, 223.

Before explaining Moss' knowledge-based approach to legal proof, it is first necessary to explain what she means by the phrase "probabilistic knowledge." Very succinctly, Moss' claim is that "probabilistic beliefs can constitute knowledge."¹¹⁹ An ambiguity occurs in that the terms "belief" and "knowledge" can refer to both "mental states and for their contents."¹²⁰ The content is considered knowledge if it is "the content of a state that constitutes knowledge in the former sense."¹²¹ There is thus, for example, "a mental state of believing that Jones probably smokes... and the content of this state can be knowledge."¹²² The mental state of belief in a proposition is related to the subjective probability that one assigns to the proposition. Belief, on Moss' view, "is the state of having credences that are contained in a certain set of probability spaces, such as the set of probability spaces that assign at least .5 probability to the proposition."¹²³ Some defenses of the argument that probabilistic beliefs can constitute knowledge assume that "probabilistic beliefs have probabilistic contents,"¹²⁴ yet this does not need to be assumed to argue for the thesis.

Moss then expands upon what it means for probabilistic knowledge to *constitute* knowledge, as well as what it means to say that probabilistic beliefs *can* do so. Regarding the former concern about constitution, Moss claims that if "a belief state constitutes

¹¹⁹ Sarah Moss, *Probabilistic Knowledge* (Oxford: Oxford University Press, 2018), 85.

¹²⁰ Moss, *Probabilistic Knowledge*, 85.

¹²¹ Ibid.

¹²² Ibid.

¹²³ Ibid.

¹²⁴ Ibid.

knowledge... it is a mental state of a certain type.”¹²⁵ This does not imply that *all* beliefs constitute knowledge – “further evidence may undermine”¹²⁶ the belief.

To say that “probabilistic beliefs *can* constitute knowledge”¹²⁷ is to say that “relevant contrasting possibility claims concern other types of mental states.”¹²⁸ Desiring that *p* be the case cannot constitute knowing that *p*, because “desires are not the right sort of mental state to constitute knowledge.”¹²⁹ This does not apply to probabilistic beliefs, however.

Moss claims that probabilistic knowledge can come from “all the familiar ways of getting knowledge, namely by testimony, perception, inference, memory, and *a priori* reflection.”¹³⁰ Probabilistic beliefs, on Moss’ view, “can count as knowledge according to several traditional theories of knowledge,”¹³¹ and have importance outside the realm of epistemology.

Knowledge and Legal Proof

As the title suggests, Moss’ “Knowledge and Legal Proof” defends the claim that “legal proof requires knowledge.”¹³² Initially, she argues, this is a claim which has a few points going for it. First, if legal proof required knowledge, then that would explain why we would recoil at the thought of a jury choosing to convict a defendant even though it did not know if the defendant was truly guilty. Furthermore, if Thomson’s claim that a

¹²⁵ Moss, *Probabilistic Knowledge*, 86.

¹²⁶ *Ibid.*

¹²⁷ *Ibid.*

¹²⁸ *Ibid.*

¹²⁹ *Ibid.*

¹³⁰ *Ibid.*

¹³¹ *Ibid.*

¹³² Moss, “Knowledge and Legal Proof,” 2.

case correctly adjudicated based solely on a coin toss would also be insufficient as a legal standard, then knowledge would be preferable to truth. While this is an initial observation that Moss makes about knowledge and legal proof, it is far from the main argument.

The main argument takes what may initially seem like a bit of a detour in its presentation. Moss first points out that jurisprudence is generally dissatisfied with attempts to quantify reasonable doubt.¹³³ The practical trouble with quantifying or formalizing what counts as reasonable doubt is that doing so confuses rather than aids jurors in adjudicating cases. Because previous attempts to formalize the standard fail to fully capture the common-sense notion that is meant by the phrase, reasonable doubt is an “elusive” standard.

Moss then notes that there is an analogous problem in epistemology. Citing Lewis, she claims that knowledge is likewise elusive.¹³⁴ The example she cites deals with a piece of everyday knowledge – that one’s car has not been stolen. In many circumstances, it is fine to rule out certain relevant alternatives (e.g., that a thief has stolen the car). Yet when reflecting on such a proposition, the relevant alternatives become salient. The puzzle is that “[b]y discussing possibilities, we make them relevant. As more possibilities become relevant, our epistemic standards become stricter, and it becomes harder for us to assert true knowledge ascriptions.”¹³⁵ One advantage of a knowledge-based account of legal proof, Moss argues, is that the elusiveness of knowledge explains the elusiveness of reasonable doubt in that it can help delineate

¹³³ Moss, “Knowledge and Legal Proof,”

¹³⁴ *Ibid.*, 5.

¹³⁵ *Ibid.*, 6.

which relevant alternatives would be unreasonable doubts and thus fall outside the concept of reasonable doubt. A paranoid belief that the defendant is the victim of conspiracy, or that an evil demon is convincing the jury that the defendant is guilty when he is in fact innocent, are examples of alternatives to guilt that would be improper to consider as a reasonable doubt.¹³⁶ Doing so risks “destroying” the knowledge that the jury has when finding the defendant guilty. Thus, by instructing juries to ignore such possibilities, the burden of proof helps exclude the types of alternatives which would undermine the ruling. Just as a reasonable person would use knowledge to guide their actions without considering Cartesian-like doubts, so too would a jury use knowledge to guide their verdict without invoking doubts about the existence of an external world.¹³⁷

The knowledge-based account of legal proof as presented here may strike some as odd, Moss claims, because a common objection to knowledge-based accounts of legal proof is that they are too strict – that is, that knowledge-based accounts would not allow for conviction in cases in which common sense would dictate to convict.¹³⁸ On Moss’ account, however, the knowledge-based account guards *against* the epistemic inflation which would entertain concerns about government conspiracy or Cartesian demons.¹³⁹ One advantage of the knowledge-based account is that this guarding against unreasonable doubt is paralleled in the creation of the standard of reasonable doubt. As a matter of historical fact, jurors during the Enlightenment would often refuse to convict defendants on religious grounds, even in cases where there was no reasonable doubt that the

¹³⁶ Moss, “Knowledge and Legal Proof,” 6-7.

¹³⁷ *Ibid.*, 8.

¹³⁸ *Ibid.*, 3.

¹³⁹ *Ibid.*, 8.

defendant was guilty. To encourage jurors to avoid considering the religious concerns which would forbid conviction, “[t]he language of reasonable doubt was used to encourage jurors to deliberate using a more reasonable and more useful standard.”¹⁴⁰

A second benefit of the knowledge-based account that Moss gives is that “it can help answer an objection to the knowledge account of legal proof—namely, that the account imposes an overly strict demand on the subjective state of the factfinder.”¹⁴¹ The objection holds that while knowledge requires that one remove all doubts, no matter how unreasonable they may be, the burden of proof only requires that one remove all reasonable doubts.¹⁴² But by calling attention to the existence of unreasonable doubts, one “implicitly grants the existence of the very possibilities that the reasonable doubt standard calls jurors to set aside.”¹⁴³ What the standard asks is that the jurors act reasonably in their deliberation of the case, and therefore only entertain doubts which it is reasonable to have. As such, it forbids the type of conspiratorial or Cartesian lines of thought which are impractical to have.

Furthermore, a third reason why Moss claims that the knowledge-based account is useful is that it helps explain why attempts to define reasonable doubt have been unsatisfactory. While lawyers and existing philosophical literature have attempted to quantify the standard, such definitions are condemned by the courts, which state that “the criminal standard of proof cannot be defined in terms of any threshold notion of

¹⁴⁰ Moss, “Knowledge and Legal Proof,” 9.

¹⁴¹ *Ibid.*

¹⁴² *Ibid.*, 10.

¹⁴³ *Ibid.*

confidence.”¹⁴⁴ The knowledge-based account differentiates between probable doubts on one hand and doubts are “capable of undermining knowledge”¹⁴⁵ on the other. The difference between the two is that “knowledge of guilt requires ruling out relevant possibilities in which the defendant is innocent, where the relevance of a possibility may depend on its non-probabilistic structural features.”¹⁴⁶ If, for example, each of the prisoners in the B version of Prisoners were tried separately, in each instance the relevant possibility of the defendant being the prisoner who sat aside would be a relevant possibility, even though it is improbable.

After giving this account of the connection between knowledge and legal burdens of proof, Moss uses it to explain the insufficiency of statistical evidence. She first notes that a knowledge-based account would give the same results that common sense would dictate in the cases presented.¹⁴⁷ She then further argues that existing literature notes that “legal proof seems to require *something that looks an awful lot like knowledge*.”¹⁴⁸ Knowledge, on this account, consists of numerous components – namely, that knowledge is factive, sensitive, “not just the result of luck,”¹⁴⁹ safe, and “absent in Gettier cases.”¹⁵⁰ Moss then notes that components of knowledge are already present in existing theory that deals with legal proof. For example, she notes that Thomson argues that legal rulings require something more than epistemic luck. She then cites other theories which state that legal proof must be safe and that proof “requires something that is *absent in Gettier*

¹⁴⁴ Moss, “Knowledge and Legal Proof,” 11.

¹⁴⁵ Ibid.

¹⁴⁶ Ibid.

¹⁴⁷ Ibid., 21.

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

cases”¹⁵¹ Thus, Moss’ knowledge-based account would encompass existing theories of legal proof.

One objection to this is that it does not seem to apply to the preponderance of the evidence, because all that is required to impose liability in civil cases is for the judge to have a “greater than .5 credence that the defendant is liable.”¹⁵² This differs from knowledge because knowledge “requires the factfinder to fully believe that the defendant is liable, which is a much stricter constraint.”¹⁵³

Moss responds by conceding that meeting the preponderance of the evidence does not require the fact finder to know that the defendant is liable. However, she claims that “proof of liability by a preponderance of the evidence requires that the factfinder know that the defendant is probably liable.”¹⁵⁴ To meet the preponderance of the evidence, the judge must know that the probability that the defendant is liable exceeds .5. Thus, instead of requiring that the fact finder know the defendant is liable, the knowledge-based account of the preponderance of the evidence states that “the factfinder has certain credences and that those credences constitute knowledge.”¹⁵⁵

This account assumes that credences “are among the kinds of attitudes that can constitute knowledge.”¹⁵⁶ Moss justifies this by claiming that “[j]ust as you can rule out relevant alternatives to your full beliefs, you can rule out relevant alternatives to your probabilistic beliefs. Rule out enough of them, and you can acquire knowledge.”¹⁵⁷

¹⁵¹ Moss, “Knowledge and Legal Proof,” 22.

¹⁵² *Ibid.*

¹⁵³ *Ibid.*

¹⁵⁴ *Ibid.*, 23.

¹⁵⁵ *Ibid.*

¹⁵⁶ *Ibid.*

¹⁵⁷ *Ibid.*

To put this back in the context of the preponderance of the evidence, while the preponderance of the evidence requires that the fact finder's credence that the defendant is liable exceed .5, the knowledge-based account adds that "the defendant is proven liable by a preponderance of the evidence if and only if this probabilistic belief constitutes knowledge."¹⁵⁸ In the B version of the Gatecrasher Case, for example, the defense's claim that the defendant paid to attend is a salient possibility which causes knowledge to be undermined. While the credence that the defendant is liable is .7, this credence does not constitute knowledge because of the presence of the salient possibility that the defendant paid to enter.

This account applies to other burdens of proof as well. Moss cites existing legal literature which states that the different burdens of proof not only require "different levels of confidence, but different *levels of knowledge*."¹⁵⁹ Thus, in stricter burdens of proof, the burden requires that the fact finder have a higher credence in liability or guilt, and that this credence constitutes knowledge.

Moss, however, notes two further facts about legal proof. First, in certain cases, bare statistical evidence *is* considered sufficient for a liable verdict.¹⁶⁰ She cites two examples of liable verdicts based on bare statistical evidence: *Kramer v. Weedhopper* (1986) and *Manko v. United States* (1986). In the former,

"Kramer was injured in a plane crash which resulted from a defective bolt sold as part of a Weedhopper airplane kit. Weedhopper purchased 90% of its bolts from Lawrence and 10% from Hughes. Kramer filed a complaint alleging strict product liability against Lawrence. The circuit court granted summary judgment to

¹⁵⁸ Moss, "Knowledge and Legal Proof," 23.

¹⁵⁹ *Ibid.*, 24.

¹⁶⁰ *Ibid.*, 25.

Lawrence, arguing that the available statistical evidence was insufficient to prove that the bolt that injured Kramer probably came from Lawrence.”¹⁶¹

In the latter, Manko developed a medical condition after receiving a swine flu vaccine, and alleged that the vaccine caused the condition. Based on expert testimony which stated that the prevalence of the condition was “more than twice as prevalent in people who had received the vaccine as compared with those who hadn’t,”¹⁶² the court ruled in favor of Manko.

Yet Moss argues that neither the causal account nor the sensitivity-based account of legal proof can account for the rulings in *Kramer* and *Manko*, as the bare statistical evidence presented in the two cases was neither more causally connected to the event in question nor more sensitive than the evidence in the B version of the Gatecrasher Case. Yet the knowledge-based account can account for such rulings, because it can eliminate the relevant alternatives to liability that would undermine knowledge.¹⁶³ What counts as a relevant possibility is, on Moss’ view, context-sensitive. For example, she claims that stakes may influence what counts as a relevant possibility. Such stakes may have a moral dimension to them as well – for example, “[f]alsely profiling an individual person as having a negative character trait might be morally different from other instances of false profiling, such as falsely profiling inanimate objects or corporate defendants.”¹⁶⁴

The discussion of moral stakes is also involved in the second point which Moss brings up: namely, that in some cases, not only is bare statistical evidence insufficient to

¹⁶¹ Moss, “Knowledge and Legal Proof,” 25.

¹⁶² *Ibid.*

¹⁶³ *Ibid.*, 26.

¹⁶⁴ *Ibid.*

motivate a liable verdict, but is also inadmissible as evidence in the first place.¹⁶⁵ While in the former case, bare statistical evidence can still be used as a part (but certainly not the sum total) of legal reasoning, in the latter case it is forbidden to even account for it. Moss provides a couple examples of such statistics – “statistical facts about crime rates among residents of a given neighborhood are irrelevant when it comes to proving the criminal behavior of a particular resident of that neighborhood.”¹⁶⁶ Similarly, that the majority of crime in an area involves illegal firearms “is irrelevant when it comes to proving that some particular assault in that neighborhood involved an illegal firearm.”¹⁶⁷

Moss then argues that it is difficult for the causal account and the sensitivity-based accounts to account for this type of bare statistical evidence. These accounts “merely impose a necessary condition on the sufficiency of evidence,”¹⁶⁸ but what is needed to explain these phenomena is “an additional necessary condition for admissibility.”¹⁶⁹ On the other hand, Moss argues that the knowledge-based account can account for such cases. The knowledge-based account requires that the judge have a sufficiently high credence *and* that such a credence constitutes knowledge. Such credences constitute knowledge if and only if “the factfinder can rule out certain [relevant] possibilities.”¹⁷⁰ Yet not only would the introduction of such statistics fail to rule out these possibilities, but the introduction of the statistical evidence in these cases may mislead the factfinder. Even if the evidence does not *actually* mislead, the mere

¹⁶⁵ Moss, “Knowledge and Legal Proof,” 26.

¹⁶⁶ *Ibid.*

¹⁶⁷ *Ibid.*

¹⁶⁸ *Ibid.*, 27.

¹⁶⁹ *Ibid.*

¹⁷⁰ *Ibid.*

salient possibility that it *can* mislead forbids it from being entered as evidence. This, again, has a moral element to it, as these statistics are placed in a context in which moral stakes make certain possibilities relevant. Thus, while Moss' account is largely epistemic, it also encompasses some elements of the moral considerations around the disparity in verdicts.

CHAPTER 3

MAIN OBJECTIONS TO THE EXISTING ACCOUNTS

Objections to Thomson's Causal Account

Several objections to Thomson's Causal Account have been proposed. For sake of organization, I classify them into three main types. The first type of objection argues that an appropriate causal connection between evidence and event is not necessary for a conviction. The second type of objection holds that an appropriate causal connection between evidence and event is insufficient for conviction. Finally, the third type of objection argues that Thomson's account does not sufficiently explain what constitutes an "appropriate" causal connection.

A Causal Connection is Not Necessary for Conviction

One standard objection to Thomson's account of legal proof is that a causal connection between evidence and event is not necessary for a conviction. One type of example in which this is the case involves misleading evidence and false convictions. It is unfortunately common that "courts find defendants liable [or guilty] that are in fact not at fault."¹⁷¹ In such cases, there is strong but nonetheless misleading evidence which supports conviction. Following Blome-Tillmann, I call the convictions in such cases "no-fault wrongful convictions."¹⁷² In such cases, the conviction is very real: people do, as a matter of fact, face penalties in cases of false convictions. Yet the casual account would be unable to explain why the guilty verdict was reached. If the defendant is, in fact, not at fault (as would be the case in false convictions), then he could not have caused the

¹⁷¹ Blome-Tillmann, "Sensitivity, Causality, and Statistical Evidence," 108.

¹⁷² Ibid.

evidence presented at the trial.¹⁷³ While there is no causal connection between the evidence and the defendant, the conviction is reasonable given the misleading evidence.

As such, a causal link is not necessary to motivate a no-fault wrongful conviction.

Yet there are cases in which the jury can correctly rule in favor of conviction while lacking a causal connection between the evidence and the event. Moss provides one such case, called *Spit in the Sink*:

Spit in the Sink: “Alice is found murdered in her bedroom. A detailed forensic study proves the following facts: (a) the murder took place in her apartment within the last month, (b) no one except for Alice entered her apartment during that time, except for one person who left some spit [in] her bathroom sink, and (c) that spit came from the defendant.”¹⁷⁴

In *Spit in the Sink*, the evidence picks out the defendant specifically (and is thus a piece of individual evidence), but there is no causal connection between the homicide and the spit in the sink. For example, Moss stipulates that the spit may have come a sneeze which in turn was caused by a cold virus. The causal account of how the spit in the sink does not reference the act of murder, but nonetheless, in such cases, the jury would correctly find the defendant guilty. Thus, as there are some cases in which the jury correctly reaches a guilty or liable verdict absent a causal connection between the evidence and the crime, such a connection is not necessary for a conviction.

A Causal Connection is Insufficient for Conviction

The second type of objection to the causal account holds that in some cases, there is a causal connection between the evidence and the crime in question, but that this is nonetheless insufficient to justify conviction. Blome-Tillmann and Moss modify the

¹⁷³ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 109.

¹⁷⁴ Moss, “Knowledge and Legal Proof,” 20.

Gatecrasher and Prisoner cases, respectively, to produce such examples. Blome-Tillmann's example, called *The First of the Gatecrashers*, functions as follows:

First of the Gatecrashers: "It's Sunday afternoon and Hannah decides to gatecrash the local rodeo. As she climbs the fence, a large number of people in the ticket line get the same idea and follow her dubious example. More and more people start climbing the fence. Noticing that something is amiss, the organizers of the rodeo decide to take a count of the people in the stadium. Realizing that many more people are in the arena than have paid admission, they decide to take action. They randomly pick Hannah and sue her for damages. The organizer's evidence is as follows: Hannah attended the Sunday afternoon event—she was seen and photographed on the main ranks. No tickets were issued at the entrance, so Hannah cannot be expected to own a ticket stub. However, while 1,000 people were counted in the seats, only 300 paid for admission. No further evidence is presented in court."¹⁷⁵

A similar case, called *Bold Prisoner*, appears in Moss:

Bold Prisoner: "25 prisoners are in a prison yard. An especially bold prisoner attacks the prison guards and thereby causes a riot. 23 prisoners join in the riot, while the remaining prisoner tries to stop it. Local prosecutors randomly select one of the prisoners from the yard and bring him to trial. By sheer coincidence, the randomly selected prisoner is the bold prisoner responsible for the riot."¹⁷⁶

In both *First of the Gatecrashers* and *Bold Prisoner*, the defendant caused the statistical evidence used in court. Because Hannah decided to gatecrash, the other 699 gatecrashers joined her in gatecrashing, thereby causing the statistic that 70 percent of the audience gatecrashed. Similarly, in *Bold Prisoner*, the prisoner who starts the attack causes the 23 other prisoners to join in on the attack, thereby causing the statistic that 96 percent of the prisoners were responsible for the attack. Yet because the jury is presented with evidence identical to the evidence in the original B versions of the *Gatecrasher* and *Prisoner* cases, the jury should acquit. Thus, while there is a causal connection between

¹⁷⁵ Blome-Tillmann, "Sensitivity, Causality, and Statistical Evidence," 106-7.

¹⁷⁶ Moss, "Knowledge and Legal Proof," 18.

the evidence and the crime – namely that the defendant’s action caused the bare statistical evidence – such a connection is insufficient to motivate a liable or guilty verdict.

Blome-Tillmann and Moss present another pair of examples, called *Opportunistic Gatecrasher* and *Reluctant Prisoner*, respectively, which also present a problem for the claim that sensitivity is sufficient for conviction. In Blome-Tillmann’s example:

Opportunistic Gatecrasher: “Sarah is on her way to her favourite [sic] pub to watch the game—as she does every Saturday afternoon. She hasn’t been able to afford the entrance to the stadium in many years, even though she’d love to watch the game there instead of in the pub. When she comes by the stadium she sees that a lot of people are gatecrashing. She decides to seize the opportunity and joins in. The evidence presented against her in court is as follows: Sarah was in the stadium (she was photographed by security cameras) and 70% of attendees in the stadium were gatecrashers. No further evidence is presented in court.”¹⁷⁷

Just as in the B version of the Gatecrasher case, the probability that Sarah gatecrashed, given the evidence presented in court, is .7. And, as before, the evidence presented in Opportunistic Gatecrasher is bare statistical evidence, and thus would presumably be subject to the Wells Effect.

Moss presents a similar example, called *Reluctant Prisoner*:

Reluctant Prisoner: 50 prisoners are in a prison yard. Some of them start a riot, and others start to join in. An especially reluctant prisoner decides that he will only join the riot if at least 48 others participate. Eventually this happens, and he joins in, leaving just one innocent prisoner who refuses to join the riot. Local prosecutors randomly select one of the prisoners from the yard and bring him to trial. By sheer coincidence, the randomly selected prisoner is the reluctant prisoner, the last to join the riot.”¹⁷⁸

In both *Opportunistic Gatecrasher* and *Reluctant Prisoner*, “the statistical evidence causes the fact to be proved.”¹⁷⁹ Because the others started to gatecrash, Sarah decides to

¹⁷⁷ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 106.

¹⁷⁸ Moss, “Knowledge and Legal Proof,” 18.

¹⁷⁹ *Ibid.*

join in on the gatecrashing. In *Reluctant Prisoner*, the fact that the other prisoners are attacking the guard causes the defendant to choose to join in. On Thomson's view, then, these pieces of evidence are forward-looking evidence. There is thus a causal connection between the evidence and the event of the crime in this pair of cases. Yet because both cases involve bare statistical evidence, they would be subject to the Wells Effect. As such, the causal connection in this pair of cases is also insufficient for conviction.

Similarly, the causal connection in the case of *Blood at the Scene of the Crime*, the bare statistic that 42 percent of the population has Type A blood is necessary (via Bayes' Theorem) to determine that the probability that the blood at the scene of the crime is most likely the defendant's.¹⁸⁰ The statistic thus helps establish a putative causal connection between the evidence and the crime – namely, that the blood at the scene of the crime was caused by the defendant's bleeding. Yet if bare statistical evidence is insufficient to motivate liability, then the .7 probability that the blood is the defendant's also should be insufficient to establish that the blood is the defendant's. Even though the bare statistic helps establish a putative causal connection, it is insufficient to motivate a guilty verdict.

What Constitutes an "Appropriate" Causal Connection?

A final trouble with Thomson's account concerns her stipulation that the evidence be causally connected "in an appropriate way"¹⁸¹ to the "fact that the defendant caused the harm."¹⁸² While Thomson claims that both forward-looking and backward-looking

¹⁸⁰ Kaye and Freedman, "Reference Guide on Statistics," 274.

¹⁸¹ Thomson, "Liability and Individualized Evidence," 203.

¹⁸² *Ibid.*

individualized evidence are examples of appropriate causal connection, what constitutes an “appropriate” causal connection is nonetheless still unclear. In *First of the Gatecrashers* and *Bold Prisoner*, the statistical evidence is backward-looking, in that the statistic points back on the causal chain to the fact that the defendant caused the statistic in question. Yet such a causal inference is unknown to the jury would be improper to assert given the body of evidence presented in the cases. Such a causal connection may be considered inappropriately connected to the fact, then. However, such a claim leads to further questions about what constitutes an *appropriate* causal connection.

In *First of the Gatecrashers* and *Bold Prisoner*, the statistical evidence presented at the court is backward-looking evidence, but is bare statistical evidence. Thomson’s account gives backward-looking and forward-looking *individual* evidence as examples of appropriately connected evidence. It could be that individual evidence, and not bare statistical evidence, is appropriately connected to the fact that the crime happened.

Yet such a specification would fail to solve the problem on two counts. First, it would still leave in the evidence in the *Blood at the Scene of the Crime* example, in which the statistical evidence is used to individuate the defendant. Yet the individuating nature of the evidence is still reliant on the bare statistic that 42 percent of the population has Type A Blood and is also probabilistic in nature, given that the probability that the blood is the defendant’s is only .7. Would the individuation allow for the blood to be counted as appropriately causally connected, or would the fact that such a putative individuation relies on statistical evidence forbid such a connection?

Second, such a claim risks begging the question unless further argument is given to show that bare statistical evidence in these examples is causally connected in an inappropriate way. The circularity in argumentation is thus: Thomson claims that what differentiates cases involving individual evidence and bare statistical evidence is that the former type of evidence is causally connected to the crime “in an appropriate way,”¹⁸³ while bare statistical evidence lacks such an appropriate connection. In cases such as First of the Gatecrashers, where there *is* a causal connection between a piece of bare statistical evidence and a crime, such a causal connection is inappropriate. But what makes this causal connection inappropriate is merely the fact that the bare statistical evidence is not individual evidence. Such an assumption would thus presuppose the very epistemic distinction which Thomson attempts to show.

Objections to Enoch et al’s Sensitivity Account

Much like objections to Thomson’s causal account of legal proof, objections to the sensitivity account of legal proof can be grouped into two main types of objection – namely, that sensitivity is not necessary for conviction and that sensitivity is insufficient for a verdict.

Sensitivity is Not Necessary for Conviction

One objection to the claim that sensitivity is necessary for conviction is that the sensitivity account, much like the causal account, cannot account for false convictions.

Sensitive judgements are factive – “[n]ecessarily, if one’s belief or judgement that p is sensitive, then p is true.”¹⁸⁴ If one falsely believes p in the actual world w , then the

¹⁸³ Thomson, “Liability and Individualized Evidence,” 203.

¹⁸⁴ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 108.

closest world in which $\sim p$ is simply w itself. But sensitivity “requires that x in w not believe that p in the closest $[\sim p]$ -world to w , and thus, that x not believe that p in w .”¹⁸⁵

Because x believes p in w , x 's belief is insensitive.

This is a problem for the sensitivity account, Blome-Tillmann claims, because “if a judgement meets the standard of proof only if it is sensitive... then no judgement that fails to be sensitive meets the standard of proof.”¹⁸⁶ But because only true beliefs can be sensitive, “no conviction in which the defendant is not at fault can ever meet the standard of proof.”¹⁸⁷ Yet there are, as a matter of fact, false convictions which have real consequences – one suffers the penalty even if the fact finder’s judgement is (unbeknownst to the fact finder) incorrect.

Yet this is not the only problem for the claim that sensitivity is necessary for conviction. Moss presents one such example in which this is not the case, called *Grand Canyon*:

“*Grand Canyon*: Acme Corp. is charged with dumping waste onto federal land without a permit. At trial, the prosecution presents video evidence of Acme employees heaving a trash bag into a chute that dumps out into the Grand Canyon.”¹⁸⁸

The evidence presented at court should be enough to motivate a conviction. Yet there is a plausible way in which the evidence could be insensitive – by imagining a counterfactual in which “if Acme Corp. had not in fact been guilty of dumping waste onto federal land, it would have been because the trash bag in the video had gotten stuck

¹⁸⁵ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 108.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid.

¹⁸⁸ Moss, “Knowledge and Legal Proof,” 20.

in the chute and remained on their private property.”¹⁸⁹ In such a counterfactual, however, the jury would be presented with the exact same video evidence, and would thus convict in such a case. The counterfactual that “if Acme Corp. had not dumped, the jury would not have found it guilty” is thus false in such a counterfactual. Thus, the “video evidence is sufficient for legal proof without being sensitive to the fact that it proves.”¹⁹⁰

Sensitivity is Insufficient for Conviction

The objections which hold that sensitivity is insufficient to convict mirror the objections to the causal account on the same grounds. Indeed, the same cases used to argue against the causal account, namely *First of the Gatecrashers* and *Bold Prisoners*, also apply to the sensitivity account. Starting with *First of the Gatecrashers*, Blome-Tillmann argues that the verdict handed to Hannah is sensitive if and only if the following counterfactual claim is true:

“If Hannah hadn’t gatecrashed, then the court wouldn’t have found Hannah liable.”¹⁹¹

Yet because Hannah caused the others to join in on the gatecrashing, in the closest possible world in which Hannah does not gatecrash, no statistic that 70 percent of the attendees gatecrashed would have occurred. Thus, in the nearest possible world in which Hannah does not gatecrash, no trial would have occurred, making the counterfactual claim true. Thus, in *First of the Gatecrashers*, the liable verdict would be sensitive to the evidence.

¹⁸⁹ Moss, “Knowledge and Legal Proof,” 20.

¹⁹⁰ *Ibid.*

¹⁹¹ Blome-Tillmann, “Sensitivity, Causality, and Statistical Evidence,” 107.

Similarly, a guilty verdict in *Bold Prisoner* would be sensitive as well, according to Moss:

“In *Bold Prisoner*, the defendant caused the riot. We can suppose that if he hadn’t started the riot, the guards wouldn’t have been harmed at all. Hence the jurors are basing their verdict on evidence that is sensitive to the fact that the defendant is guilty, in virtue of being causally connected to it.”¹⁹²

Had the bold prisoner not started the attack on the guard, the other prisoners would not have joined in, and there would thus be no attack on the guard at all. There would thus not have been a trial, and thus the claim that “had the defendant not attacked the guard, the jury would not have found him guilty” would be trivially true.

Furthermore, in the *Opportunistic Gatecrasher* and *Reluctant Prisoner* cases, convictions would be sensitive. The ruling in *Opportunistic Gatecrasher* is sensitive if and only if the following counterfactual claim is true:

“If Sarah hadn’t gatecrashed, then the court wouldn’t have found her liable.”¹⁹³

Such a claim is true, Blome-Tillmann claims, because “if Sarah hadn’t gatecrashed, she would have gone to the pub, wouldn’t have been photographed in the stadium, and wouldn’t have been taken to court in the first place.”¹⁹⁴ This would make the statistic presented in *Opportunistic Gatecrasher*, on the sensitivity account of legal proof, individual evidence rather than bare statistical evidence. Yet because, from the point of view of the judge, the evidence in *Opportunistic Gatecrasher* is the same as the evidence in the B version of the *Gatecrasher* case, it is bare statistical evidence, and would presumably be subject to the Wells Effect.

¹⁹² Moss, “Knowledge and Legal Proof,” 19.

¹⁹³ *Ibid.*

¹⁹⁴ *Ibid.*

Just like Opportunistic Gatecrasher, a conviction in Reluctant Prisoner would be sensitive. The relevant counterfactual in Reluctant Prisoner is as follows:

“If the defendant hadn’t attacked the guard, then the court would not have convicted him.”

Yet the defendant joins in on the attack because the other prisoners attacked the guard first. Thus, in the nearest possible world in which the defendant does not attack the guard, the other prisoners do not attack the guard initially, and thus no statistic that 96 percent of the prisoners attacked the guard would be present. The jury would thus not find the defendant guilty because no trial would have occurred.

Objections to Moss’ Knowledge-Based Account

Given that Moss’ article is relatively recent, there is not a set of stock objections from which this thesis can draw. Nevertheless, there are a few problems with her account. What Counts as a “Reasonable” Doubt?

Moss notes that as a matter of legal fact, doubts regarding Cartesian demons or government conspiracy are generally inadmissible and insufficient to justify a reasonable doubt.¹⁹⁵ In most cases, this is to be expected – it would be both epistemically and pragmatically undesirable to regularly entertain doubts about the external world in the courtroom.

Yet Moss notes that what counts as a relevant alternative to the claim that the defendant is guilty, and thus what counts as a reasonable doubt to entertain, is context sensitive.¹⁹⁶ The trouble occurs when trying to determine what counts as a reasonable

¹⁹⁵ Moss, “Knowledge and Legal Proof,” 6-7.

¹⁹⁶ Ibid.

doubt and in which circumstances it counts as reasonable. Take as an example the aforementioned *Kramer v. Weedhopper*. As a civil case, its burden of proof was the less strict preponderance of the evidence. The Illinois appellate court held Lawrence liable based on three facts: “(1) Lawrence supplied 90% of Weedhopper's AN4-33 bolts in 1979; (2) Lawrence was used by Weedhopper to supply bolts to meet general demand; and (3) Hughes Aviation was used to supply bolts only as specially necessary.”¹⁹⁷ From this, the court held that the evidence presented “while circumstantial, permits the inference that the bolts in Weedhopper's bin and the bolt supplied to Kramer were purchased from Lawrence. Hughes Aviation was merely a “possible” source of the bolt and plaintiff need not, at least at summary judgment stage, disprove that possibility [emphasis mine].”¹⁹⁸ On Moss’ view, then, the possibility that Hughes supplied the bolt is not relevant because in this context, it is not a possibility “according to which causation [i.e., that Lawrence supplied the bolt] is no more than .5 likely.”¹⁹⁹

Yet trouble arises in determining the specific context in which bare statistical evidence is sufficient for conviction. The context of *Kramer* is quite similar to the context of the B version of the Red Cab Case – both involve bare statistical evidence which provides the rates at which two mutually exclusive companies were present at the context in which the relevant event occurred. In the B version of the Red Cab Case, the statistical evidence shows that Red Cab Company operated 70 percent of the cabs and Green Cab Company operated 30 percent of the cabs in the area that Smith’s accident occurred in. In

¹⁹⁷ *Kramer v. Weedhopper of Utah, Inc.*, 141 Ill. App.3d 217 (1986), on 222.

¹⁹⁸ *Ibid.*

¹⁹⁹ Moss, “Knowledge and Legal Proof,” 26.

Kramer, the statistical evidence shows that Lawrence provided 90 percent of the bolts to Weedhopper, while Hughes provided only 10 percent of the bolts. But as Wells' experiment showed, neither laypeople nor judges routinely hold the defendant liable in cases like the B version of the Red Cab Case.²⁰⁰ Indeed, in *Smith v. Rapid Transit Inc.*, the real-life case which inspired the Red Cab Case, the ruling for the defendant was given even though Rapid Transit "had the sole franchise for operating a bus line on Main Street, Winthrop [the street on which the accident occurred]." ²⁰¹

This spells a problem for Moss' explanation of the ruling in *Kramer* because of the differences between the context of *Kramer* and the context of the B version of the Red Cab Case and *Smith v. Rapid Transit* to warrant the disparity in rulings. Given that the salient facts in *Kramer* are so similar to the salient facts in the B version of the Red Cab Case and the salient facts in *Smith*, the claim that the possibility that Hughes supplied the bolt constitutes an unreasonable doubt would be incompatible with the claim that the possibility that the cab which hit Mrs. Smith was a green cab does constitute a reasonable doubt.

Next, the presence of successful entrapment defenses presents a problem for Moss' theory. A successful entrapment defense must prove two facts: first, that a government agent (e.g., a police officer) induced the defendant to commit the crime in question,²⁰² and second, that the defendant would not have committed the offense had the

²⁰⁰ In Wells, the defendant is the "Blue Bus Company" and is being sued over the death of a pet dog, but is in most other respects identical to the B version of the Red Cab Case. See Wells, "Naked Statistical Evidence of Liability," 741-2.

²⁰¹ *Smith v. Rapid Transit Inc.*, 317 Mass. 469, 58 N.e.2d 754 (1945) on 470.

²⁰² See Wex Legal Dictionary, "Entrapment," Legal Information Institute, Cornell, <https://www.law.cornell.edu/constitution-conan/amendment-14/section-1/entrapment>

government agent not induced him to do so. Successful entrapment defenses are rather rare, but not unheard of. Whether or not an entrapment defense fails, the presence of entrapment defenses presents a problem for Moss' account of legal proof. On Moss' view, reasonable doubt prevents against the "epistemic inflation"²⁰³ that would occur if courts were to consider unreasonable doubts that may undermine legal proof. The possibility of far-fetched ideas should be set aside so as not to make legal proof as "elusive" as philosophical certainty. One type of possibility that Moss claims reasonable doubt asks jurors to set aside is the possibility of governmental conspiracy. Yet in entrapment defenses, these possibilities are brought forth to be reckoned with. For example, in *Sorrells v. United States*, the entrapment defense rested in part on the fact that a prohibition agent named Martin had asked the defendant to provide him liquor (note that this was during Prohibition).²⁰⁴ The court concluded that

"the act for which defendant was prosecuted [viz. the procurance of alcohol] was instigated by the prohibition agent, that it was the creature of his purpose, that defendant had no previous disposition to commit it but was an industrious, law-abiding citizen, and that the agent lured defendant, otherwise innocent, to its commission by repeated and persistent solicitation in which he succeeded by taking advantage of the sentiment aroused by reminiscences of their experiences as companions in arms in the World War."²⁰⁵

Because of the element of government intent to induce the defendant to commit crime that would otherwise not have occurred to the defendant, entrapment defenses introduce possibilities that typically would be excluded on Moss' account of reasonable doubt. Internal to the concept of entrapment is the idea of conspiracy, so by bringing it

²⁰³ Moss, "Knowledge and Legal Proof," 6.

²⁰⁴ *Sorrells v. United States*, 287 U.S. 435 (1932) on 441.

²⁰⁵ *Ibid.*

up, conspiracy becomes relevant. Because it is internal to the defense (i.e., it follows from the facts at hand in a case), it is not the same as Cartesian doubt.

Given that what counts as a reasonable doubt is context-sensitive, doubts around government conspiracy need not be treated as absurd in all cases. There is a long history of U.S. federal infiltration and prosecution of (mainly left-wing) political dissidents,²⁰⁶ and if such facts are relevant to a case involving such groups, then there is no epistemic harm in bringing up hypotheses about government overreach.

Thus, it is either the case that there are certain doubts which are, *ipso facto*, irrelevant, in which case there are limits to the contextualism of knowledge, or there are no such doubts, in which case the purpose of stipulating *reasonable* doubt is puzzling.

Moss' Standard Does Not Explain Borderline Cases

Recall Moss' explanation of the verdicts in *Kramer v. Weedhopper* and in *Manko v. United States*. The ruling against Lawrence in *Kramer* was based on the claim that in the context of a civil case, the 90% probability that the defective bolt was supplied by Lawrence was sufficient to permit "the inference that the bolts in Weedhopper's bin and the bolt supplied to Kramer were purchased from Lawrence."²⁰⁷ Moss' explanation for this judgement is that the preponderance of the evidence requires that "the factfinder must rule out all relevant possibilities according to which causation is no more than .5 likely."²⁰⁸ Because the possibility of Hughes supplying the bolt instead of Lawrence was only .1, it did not lower the probability that Lawrence supplied the bolt below .5, and thus

²⁰⁶ See The Church Committee, "Intelligence Activities and the Rights of Americans," (Senate Report no. 94-755, Washington, D.C., 26 April 1976), esp. 211-23.

²⁰⁷ *Kramer v. Weedhopper of Utah, Inc.*, 141 Ill. App.3d 217 (1986), on 222.

²⁰⁸ Moss, "Knowledge and Legal Proof," 26.

was not sufficient to rule in favor of Lawrence. Furthermore, the moral stakes of *Kramer* may have influenced the weight given to the possibility that Hughes supplied the bolt. For example, because Lawrence is a company, and not a specific individual, the associated moral stakes for being wrong are lower than they would be in an equivalent case in which the defendant were a person. As Moss claims, “[f]alse profiling that harms some specific person... might also carry distinctive moral costs... By contrast, false verdicts in some product liability and toxic tort cases may lack any similar costs.”²⁰⁹

Yet such an explanation flies in the face of previously established precedent. Note that *Red Cab* mirrors *Kramer* in that the defendant is a company, rather than a specific individual. Thus, whatever moral considerations ought to influence the ruling in one ought also to apply to the other. Moss’ explanation of the ruling in *Kramer* would also have to apply to the B version of Red Cab – the associated moral costs of being wrong about Red Cab Company are less severe than the moral costs of being wrong about a specific individual in, for example, *Prisoners* or *Gatecrasher*. If Moss’ reasoning for the ruling in *Kramer* is correct, then a discrepancy in probability is insufficient to motivate the discrepancy in ruling. As the probability that the Green Cab Company caused the accident is only .3, it is not a possibility that would lower the probability that the Red Cab Company caused the accident below .5. Thus, one should rule in favor of the plaintiff in *Kramer* if and only if one should rule in favor of the plaintiff in the B version of the Red Cab Case.

²⁰⁹ Moss, “Knowledge and Legal Proof,” 26.

However, in both the actual *Smith v. Rapid Transit Inc.* and in the experiments that Wells conducted, both judges and laypeople were quite reticent to rule in favor of the plaintiff. Moss' explanation of the ruling in *Kramer* thus cannot account for the general trend to rule in favor of the defendant in structurally similar cases. In trying to explain the ruling in the exceptional case, Moss weakens the explanatory power of the reasoning for the general trend in rulings.

Furthermore, as Moss notes, the original ruling in *Kramer* was in favor of Lawrence, until the Illinois appellate court overruled in favor of the plaintiff. Whatever possible disanalogy there may be between the Red Cab Case and *Kramer*, there is no disanalogy between the facts available to the district court and the facts available to the appellate court. While the district court's ruling was not final (as the appellate court overruled it), Moss' account cannot account for the initial ruling in terms of relevant alternatives – either the possibility that Hughes supplied the bolt is relevant or it is not. Given that the facts of the case did not change between the rulings, *someone* had to have ruled incorrectly. And given that the reasons to hold that the appellate court ruled correctly in *Kramer* would entail revising our reticence to rule in favor of the defendant in the B version of the Red Cab Case, it is unclear that Moss' explanation is correct.

Moss' Standard is Not Useful or Informative

What differentiates the preponderance of the evidence from beyond a reasonable doubt is, on Moss' view, that the latter requires that one rule out doubts of a certain type that would undermine the elusively of the knowledge. By contrast, the preponderance of the evidence merely requires that the factfinder have probabilistic knowledge – that is,

that the “factfinder has certain credences and that those credences constitute knowledge.”²¹⁰ Given the standard of preponderance of the evidence, the credence suffices for the imposition of liability if and only if the factfinder’s subjective probability of liability exceeds .5, and that this credence is sufficient for knowledge.

The trouble that arises stems from the fact that there does not seem to be a clean explanation for why the credence justified by individual evidence constitutes knowledge while the credence justified by bare statistical evidence alone does *not* constitute knowledge. In explaining how the B version of Gatecrashers does not meet the preponderance of the evidence, Moss argues that while the plaintiff can show that most of the attendees gatecrashed, the defense brings up the possibility that “that he is an individual, not represented by features of the group to which he belongs. Given the lottery-like similarity of all the possible defendants in the Gatecrasher scenario, this possibility is impossible to ignore.”²¹¹ Thus, while the factfinder is justified in having a degree of belief of .7 that the defendant gatecrashed, the degree of belief does not constitute knowledge because of the presence of a relevant alternative to the proposition that the defendant gatecrashed which cannot be ruled out.

Yet a similar account could be given in the A version of the Gatecrasher case. The eyewitness in the A version is imperfect – to such an extent that the posterior probability that the defendant gatecrashed is .7. As a matter of empirical fact, eyewitness testimony

²¹⁰ Moss, “Knowledge and Legal Proof,” 23.

²¹¹ *Ibid.*

is often unreliable, often failing to correctly identify a suspect.²¹² The defense could provide an argument that because eyewitness testimony is imperfect, especially given the chaos at the rodeo, the eyewitness testimony alone is insufficient to rule out relevant alternatives to the proposition that the defendant gatecrashed. One such alternative is as follows. Suppose that the policeman perceives someone (let's call him James) who looks a great deal like John. Later, after seeing the photo of John, he mistakenly claims that John was the man he saw gatecrash. In this case, the relevant possibility that the policeman simply mistook the identity of the culprit cannot be ruled out by the eyewitness testimony. Thus, it appears that the credence that would be justified by the eyewitness testimony does not constitute knowledge.

A second problem with this account is that it clashes with Moss' explanation of the exceptional cases, such as *Kramer v. Weedhopper*. In defending the ruling in *Kramer*, Moss claims that "statistical evidence suffices to prove causation just in case the factfinder knows that causation is more than .5 likely... the factfinder must rule out all relevant possibilities according to which causation is no more than .5 likely."²¹³ Yet the problem that arises with this account is why relevant possibilities that are improbable do not undermine the "elusiveness" of the proof. Why are causal claims not undermined by the presence of relevant alternatives while other types of claims are?

A similar problem arises when considering criminal cases. Consider the A version of Prisoners, in which the second guard sees Stevens attack the first. Given the fact that

²¹² For a summary of cases in which eyewitness testimony was faulty, see Sandra Guerra Thompson, "Beyond a Reasonable Doubt? Reconsidering Uncorroborated Eyewitness Identification Testimony," *UC Davis Law Review* 41, no. 4 (April 2008): 1487-1545, 1489-97.

²¹³ Moss, "Knowledge and Legal Proof," 25-6.

the guard is 99% accurate in his assessment of the suspect, why is his eyewitness testimony sufficient to rule out the relevant alternative that he misperceived the identity of the attacker?

CHAPTER 4

THE PROPOSED SOLUTION

“Gut of the Quantifier”²¹⁴ – On *De Re* Belief

I attack the question of the purpose of evidence in legal cases indirectly, by first making some claims about certain features of the legal system. The first claim that I wish to make is that the pronouncement of a verdict (for example, the jury saying “we find *S* guilty” or “we find *S* innocent”) is a type of speech act in Austin's sense of the word because there are certain limitations on its pronouncement and its force.

One such limitation is the first gamma condition of speech acts, which states that:

“Where, as often, the procedure is designed for use by persons having certain thoughts or feelings, or for the inauguration of certain consequential conduct on the part of any participant, then a person participating in and so invoking the procedure must in fact have those thoughts or feelings, and the participants must intend so to conduct themselves”²¹⁵

Failure to follow this gamma condition does not render the speech act void, but it does render it “unhappy.”²¹⁶ The pronouncement of a legal verdict is a type of speech act called a *verdictive*, which “consist in the delivering of a finding... upon evidence or reasons as to value or fact.”²¹⁷ In the context of law, then, the deliverance of a verdict consists in delivering the judge or jury’s finding about the fact of the matter in question at the trial. For a factfinder to violate the $\Gamma.1$ condition of a speech act, his pronouncement must be insincere, by, for example, claiming that he finds the defendant guilty when he in

²¹⁴ This section is named in honor of The Fall’s song of the same name.

²¹⁵ J.L. Austin, *How to Do Things with Words*, Second Edition (Cambridge, MA: Harvard University Press, 1975), 15.

²¹⁶ *Ibid.*, 39.

²¹⁷ *Ibid.*, 153.

fact believes that the defendant is innocent. In other words, a felicitous verdict is one in which the factfinder delivers the verdict which is in accordance with his beliefs. Thus, for example, a guilty verdict is felicitous only if the jury believes that the defendant is guilty.

But in bringing up belief, thorny questions about the ambiguity of belief arise. The following example, taken from Quine, shows that certain beliefs can mean different things. The sentence “Ralph believes that someone is a spy”²¹⁸ could either mean that Ralph believes that a specific person (whom Quine calls “Bernard J. Orcutt”²¹⁹) is a spy, or that Ralph believes that there are spies, but his belief is about the general existence of spies rather than a belief about a specific person. Quine formalizes the two separate readings of the sentence respectively:

“(7) $(\exists x)$ (Ralph believes that x is a spy),
(8) Ralph believes that $(\exists x)$ (x is a spy)”²²⁰

The former reading picks out a specific thing (in this case, Mr. Orcutt) as the referent of “someone.” Thus, this type of reading is called *de re* (of the thing.) By contrast, the latter does not pick out specific referent. On this reading, Ralph is simply stipulating that there are spies in the world – there are members of the Central Intelligence Agency or the Russian Federal Security Service – but this belief is not about any specific thing or person. In contrast to a *de re* reading, this latter type of reading is called a *de dicto* (loosely translated “of the phrase spoken”) reading. On a *de re* reading, “Ralph believes that someone is a spy” means that Ralph believes that someone, namely

²¹⁸ W.V. Quine, “Quantifiers and Propositional Attitudes,” *The Journal of Philosophy* 53, no. 5 (1 March 1956): 177-87, 178.

²¹⁹ *Ibid.*, 179.

²²⁰ *Ibid.*, 178.

Orcutt, is a spy, while on a *de dicto* reading, “Ralph believes that someone is a spy” means that Ralph is merely asserting that there is an indeterminate person who is an employee of a spy agency.

Just because a belief, read *de dicto*, can be true, this does not imply that a *de re* reading of a belief must be true. Here, an analogy between belief and the modal operator is fruitful for showing this. In the following example, let $D(x) = x$ is a dictator, $a = Al$, $b = Bernard$, and $c = Carl$. Suppose that in three possible worlds, the facts are as follows:

$$W_1 = \{D(a), \sim D(b), \sim D(c)\}$$

$$W_2 = \{\sim D(a), D(b), \sim D(c)\}$$

$$W_3 = \{\sim D(a), \sim D(b), D(c)\}$$

Now consider the proposition “necessarily, someone is a dictator.” This proposition may be read as claiming that there is a specific individual who is necessarily a dictator, or claiming that *someone* must be a dictator, but it need not always be the same person. The two claims may be formalized respectively:

$$\exists x(\Box D(x)) \text{ (de re)}$$

$$\Box \exists x(D(x)) \text{ (de dicto)}$$

These may be read respectively as “someone is *necessarily* a dictator” while the latter may be read as “necessarily, *someone* is a dictator.” Note, however, that the first is false. There is no individual who is a dictator in all possible worlds – while Al is a dictator in W_1 , he is neither a dictator in W_2 nor a dictator in W_3 . Similarly, while Bernard is a dictator in W_2 , he is neither a dictator in W_1 nor in W_3 . As for Carl, his dictatorship is limited to W_3 – neither W_1 nor W_2 sees him take up such a property.

However, the latter claim, that necessarily, *someone* is a dictator, is true. In all three possible worlds, there is some individual who has the property. Analogously, belief works in a similar way. Ralph's belief that someone, *de dicto*, is a spy does not entail that Ralph believes that a specific individual is a spy.

At this point, one must expand upon what it means for a piece of evidence to support a belief *de re*. Furthermore, what types of evidence support which types of beliefs? As previously shown, the truth conditions for a *de re* belief can differ from the truth conditions of a *de dicto* belief. In the example of Ralph and the spies, the claim that "Ralph believes that someone is a spy" is true if the claim is read *de dicto*, but false if read *de re* – while Ralph believes that there are employees of spy agencies, he is not attributing such employment to any specific individual.

The following analogy between the statements about dictators given earlier and *de re* and *de dicto* beliefs helps underline a further point about justifying *de re* and *de dicto* beliefs. As presented so far, the *de dicto* reading of "necessarily, someone is a dictator" (i.e., $\Box\exists x(D(x))$), given the earlier formalization) is true, while the *de re* reading of "necessarily, someone is a dictator" ($\exists x(\Box D(x))$), given the earlier formalization) is false. However, given a different set of facts, the *de re* belief could become true. Suppose that in every possible world in which "Al" refers, Al is a dictator.²²¹ This change in facts changes the proposition, read *de re*, from false to true. Yet because Ralph's beliefs are about spies, what is analogous to a change in facts in the dictator case becomes a change

²²¹ I will grant that such a supposition is rather difficult to conceive. Our commonsense intuition about being destined for power, as Saul Kripke notes in *Naming and Necessity* (Malden, MA: Blackwell Publishing, 2017 ed.), 77, is that "there [is] no logical fate hanging over [individuals] which made it in any sense inevitable that they should have possessed the properties we regard as important to them."

in available evidence in the case of Ralph. Thus, the claim about *de re* and de dicto beliefs which is worth noting here is that a change in available evidence can change the quantification of the belief – or, more simply, that different types of evidence justify a difference in the location of the quantifier.

Returning to Ralph, consider how he might justify the belief that someone (de dicto) is a spy – that is, that there are spies in the world. Such a belief may be sufficiently justified by looking up the number of employees that a given spy agency employs, or even by simply reasoning that there are certain organizations (e.g., the CIA or FSB) whose employees engaging in espionage. Yet note that such evidence does not suffice to justify the claim that someone (read *de re* as, for example, Mr. Orcutt) is a spy. Evidence that would justify such a claim would seem far different from the evidence that justifies the de dicto belief. For example, Ralph could justify such a belief (if he were to have it) by accessing evidence that Orcutt is secretive, enters and leaves his house at strange hours, dresses in a trench coat and fedora, asks pointed questions about those around him, and so on. The types of evidence that would justify Ralph believing that Orcutt is a spy is evidence which is *about* Orcutt in particular. In short, then, what it means to say that a piece of evidence justifies a belief *de re* is to say that the evidence justifies the belief to be about a specific object in particular. I offer the following as a tentative formalization of this claim:

De re belief. A piece of evidence *e* justifies a belief *B de re* if and only if *e* picks out an object *O de re* such that one is justified in holding *B* about *O*.

The evidence that Ralph could use to justify the *de dicto* belief is thus insufficient to justify the belief *de re* – armchair reasoning that there are people employed in espionage is not evidence about any flesh and blood person.

This is all well and good, but questions remain about how the referent of a belief is picked out and how beliefs are passed from person to person. After all, in the A version of the cases considered so far, the eyewitness' beliefs are passed onto the judge or jury presiding over the case. So, for example, how does the policeman's belief that John gatecrashed get passed onto the judge presiding over John's case in the A version of Gatecrashers?

What is noteworthy here is that there is a striking resemblance between the quantification of the object of a *de re* belief and proper names. Just as proper names individuate a specific entity, to hold a belief about something *de re* entails individuating the object about which one holds the belief. A further analogy which I wish to hold is that *de re* beliefs are passed on in a way much like how knowledge of proper names is, on Kripke's causal-historical account of proper names.

Kripke's theory is not formalized in *Naming and Necessity*, but he nevertheless gives a "rough statement of the theory."²²² In his view, an object is given an "initial 'baptism'"²²³ when first given a proper name. This fixes the referent of the name, either via ostention (i.e., by pointing to the object) or via definite description. The meaning of the name is then "passed from link to link"²²⁴ in a causal chain, so that even those who

²²² Kripke, *Naming and Necessity*, 96.

²²³ Ibid.

²²⁴ Ibid.

were absent from the initial baptism can understand the meaning of the name. A stylized example consists of the following. Suppose Heinrich is an astronomer who, one night, finds some new star previously unrecorded in astronomical charts. Ever the narcissist, he dubs it “Heinrich’s Red Giant.” This fixes the referent of the name “Heinrich’s Red Giant” by mental ostention – Heinrich points out the star and says to himself “this star is hereby named ‘Heinrich’s Red Giant.’” The following day, he tells his fellow astronomer Martin about the discovery. To fix the referent, Heinrich could probably not use ostention to show the location of the star (as astronomical equipment does not work well in the daytime) but could give a definite description to Martin – for example, by saying that Heinrich’s Red Giant is a member of a specific galaxy, that its location is next to previously catalogued stars S_0 and S_1 , and so on. Soon, via a series of instances in which the meaning of the name is passed on, the scientific community comes to know the meaning of “Heinrich’s Red Giant.”

I argue that *de re* beliefs are passed on in a similar manner – first, by fixing the referent of the belief either via ostention or definite description, and then by passing the referent of the belief on link to link. An analogous example might be given as follows. Mark is walking down Main Street at 3:42 pm on Tuesday when he sees a man wearing a welder’s mask and wielding a crowbar. Mark then wonders whether the man he sees is so equipped because he is a robber and concludes that he is. Mark thus forms the belief that the man he saw on Main Street at 3:42 pm on Tuesday who wore a welder’s mask and wielded a crowbar is a robber. The definite description “the man he saw on Main Street at 3:42 pm on Tuesday who wore a welder’s mask and wielded a crowbar” is a definite

description which fixes the referent of the belief. If we let $B_m(x)$ = Mark believes that x , $D(x)$ = x is a man who wore a welder's mask and wielded a crowbar on Main Street at 3:42 pm on Tuesday (I'm lazy and don't want to quantify each piece of the cluster of definite descriptions separately), and $R(x)$ = x is a robber, Mark's belief may be formalized as follows:

$$(\exists x) (B_m (D(x) \& R(x)))$$

Mark's belief is thus a *de re* belief – it is quantified in such a way as to pick out a specific referent. Alternatively, Mark could simply mentally “point” to the man in question to fix the referent, by saying “*that* man is a robber” to himself. Mark then might return home and tell his roommate Luke about the belief he formed that afternoon. In doing so, he passes on the referent of the belief along with the belief via definite description such that Luke now also believes that the man who wore a welder's mask and wielded a crowbar on Main Street at 3:42 pm on Tuesday is a robber. Thus, letting $B_l(x)$ = Luke believes that x , Luke now has the following belief:

$$(\exists x) (B_l (D(x) \& R(x)))$$

The belief *de re* has been passed on from Mark to Luke in much the same way that the meaning of a proper name is passed from link to link.

One final note before continuing is that legal trials need not consider *all* metaphysically possible worlds as relevant alternatives when adjudicating the case. There are at least two sets of possible worlds which a trial can easily disregard. First, if there are metaphysically possible worlds which are epistemically inaccessible to us (i.e., possible states of affairs about which we are unable to conceive), then it would, by definition, be

impossible for the jury to grapple with it as a relevant alternative. Second, only those possible worlds which are compatible with the given evidence need be considered. Thus, for example, a possible world in which the defendant was never born because his parents never met is a possible world which the jury can safely ignore, as it is incompatible with the fact that the defendant not only exists but is on trial. The question about the extent to which possible world semantics is even needed at all when invoking a *de re/de dicto* distinction is further complicated by the fact that Quine, from whom the distinction derives, was famously hostile to modal logic. What is notable about the example of Ralph is the difference in the placement in the location of the doxastic quantifier “Ralph believes that,” *not* the modal operator “it is necessary that.”

***De Re* Belief as the Solution to the Puzzle**

The way that belief works in the legal system has a similar ambiguity to Ralph and his beliefs about spies. Consider the sentence “the judge believes that the defendant is liable.” Let $B_J(p)$ stand for “the judge believes that p ,” $L(x)$ stand for “ x is liable,” and $D(x)$ stand for “ x is a defendant.” A *de re* and *de dicto* reading of “the judge believes that the defendant is liable” may be formalized as follows:

$$De\ re: (\exists x)(B_J(L(x)\&D(x)))$$

$$De\ dicto: B_J((\exists x)(L(x)\&D(x)))$$

In most cases, determining the identity of the defendant is a key element of the trial. If the defendant has an alibi, then there is a shadow of a doubt about the identity of the person who should be put on trial. Suppose, for example, Ferrero is on trial for a murder in Philadelphia. He produces an alibi, claiming that he was not in Philadelphia on

the date of the murder. Therefore, it is impossible for him to have committed the murder, and thus the identity of the murderer is still unknown.

Because part of the importance of a legal trial is to determine the precise identity of the guilty party, legal rulings ought to be read *de re*. What matters in Ferrero's case is not whether the judge believes that there is some guilty party, but rather whether *Ferrero in particular* is the murderer. The judge or jury who delivers the verdict declares a verdict about a specific person, namely the defendant. For sake of concision, I call the claim that verdicts ought to be read *de re* "*de re* verdicts." The key difference between a *de re* reading and a *de dicto* reading of a legal verdict is that a *de re* reading specifically picks out the individual defendant, while the *de dicto* reading does not.

The difference between *de re* and *de dicto* legal rulings is analogous to the difference between individual and statistical evidence – individual evidence picks out a specific referent (namely the defendant) while bare statistical evidence does not. Thus, while individual evidence helps justify the belief that the defendant *de re* is liable, bare statistical evidence only justifies the belief that the defendant, read *de dicto*, is liable.

Returning to Prisoners, it would be reasonable to try all 25 prisoners. If, as before, we let $B_J(p)$ stand for "the jury believes that p ," $G(x)$ stand for " x is guilty," and $D(x)$ stand for " x is a defendant," the *de re* and *de dicto* readings can be formalized as follows:

Prisoners (*de re*): $(\exists x)(B_J(G(x) \& D(x)))$

Prisoners (*de dicto*): $B_J((\exists x)(G(x) \& D(x)))$

In the A version of Prisoners, the second guard sees Stevens attack the first. The eyewitness testimony thus individuates Stevens, and thus justifies the second guard in

believing that Stevens committed the murder. This fixes the referent of the belief, much in the same way that ostention can fix the referent of a proper name. Via link passing, the guard's testimony passes the belief onto the jury. Thus, the *de re* belief is justified – there is a specific person (namely, Stevens) whom the jury believes is a guilty defendant. Given that there is a justified *de re* belief in the A version of Prisoners, the belief is sufficient for conviction. By contrast, in the B version of the case, the videotape is too grainy to determine the identity of the abstaining prisoner. The bare statistical evidence is thus insufficient to individuate any specific defendant, and is thus insufficient to justify the belief *de re*. Accordingly, while the jury is thus justified in believing Prisoners (*de dicto*), the justification for Prisoners (*de re*) is insufficient – their belief does not concern any specific prisoner.

Considering this distinction, one might see how the discrepancy in judgement in Gatecrasher-like cases may be conserved as well. In the A version, the policeman who testifies fixes the referent of his belief via ostention. To pass the belief onto the jury, he may use definite description in his testimony (by, for example, stating what John wore) to help pass on the referent of the belief. Even though the bodies of evidence in the two separate cases raise the probability of guilt to the same degree, individual evidence ties the defendant *de re* to the event in question, while the types of statistical evidence presented in Gatecrasher-like cases is insufficient to connect the defendant *de re* to the event in question.²²⁵ Or, in other words, in the B version of the Gatecrasher cases, the evidence does not provide sufficient reason to believe that *John* gatecrashed, rather than

²²⁵ This, of course, does not deny that certain types of statistical evidence *do* connect the defendant *de re* to the event.

whosoever meets the definite description of “person who was present and photographed at the rodeo.” In the B version, why prosecute John and not someone else in the crowd? In short, then, individual evidence in legal cases is a specific instance in which evidence can justify a *de re* belief and in which the belief can be passed on link to link. Given only bare statistical evidence, however, one cannot justify a belief about a specific object, and thus cannot justify a *de re* belief. This justifies the discrepancy in legal rulings because the importance of identifying the defendant correctly mandates that beliefs about the defendant be held *de re*.

Formalizing the Standards

What remains to be done for the theory is to formalize the burdens of proof. Note that the burden of proof for civil cases differs from the burden of proof in criminal cases. It would thus be unsurprising if the formalization of the preponderance of the evidence differs from the formalization of beyond a reasonable doubt.

The civil standard of preponderance of the evidence merely requires that the fact finder be convinced that “there is a greater than 50% chance that the claim is true.”²²⁶ What matters in this burden of proof is not the actual probability that a given party is liable, but rather that the trier of fact *believes* that the probability of liability exceeds 50 percent. In other words, what matters is not the objective probability, but the mental state of the fact finder. To properly formalize the preponderance of the evidence, then, we must introduce a model of beliefs. Furthermore, because the preponderance of the

²²⁶ Wex Legal Dictionary, “Preponderance of the Evidence,” Legal Information Institute, Cornell, https://www.law.cornell.edu/wex/preponderance_of_the_evidence

evidence explicitly refers to quantified probabilities, this model must be quantifiable as well.

Luckily, there is such a model already present in philosophical literature. Frank Ramsey's "Truth and Probability"²²⁷ sketches a model upon which beliefs come in different degrees. For Ramsey (as well as for Keynes, in response to whom this essay was written), there are not only full beliefs, but "partial beliefs,"²²⁸ – that is, beliefs which we only hold partially. Critically, Ramsey claims that there need not be an exact correspondence between the objective probability of some proposition p and the degree of belief which S can justifiably hold about p .²²⁹ The argument for this claim is that, even if it were possible to measure the degree of belief that S has about p , no one perceives the objective probability relation concerning p . While in some cases (such as a coin flip), there is an agreed upon probability of an event occurring, this does not hold for most events. Therefore, a strict mathematical equivalence between objective probability and degree of belief is impossible.

Furthermore, subjective probability, or the degree of belief that one attaches to a proposition, does not occur in a vacuum. Rather than simply considering the probability of a given event, one "always considers *inter alia* his own actual or hypothetical degree of belief."²³⁰

²²⁷ F.P. Ramsey "Truth and Probability" (1926) in *The Foundations of Mathematics and other Logical Essays*, ed. R.B. Braithwaite, (London: Kegan, Paul, Trench, Trubner & Co., New York: Harcourt, Brace and Company, 1931), 156-98.

²²⁸ *Ibid.*, 160.

²²⁹ *Ibid.*, 161.

²³⁰ *Ibid.*, 163.

But what concerns Ramsey more than simply criticizing Keynes is determining what a partial belief *is*.²³¹ Much like the required theory of legal belief, this account must not only investigate probability, but belief as well. One initial problem is the “common view that belief and other psychological variables are not measurable,”²³² for if beliefs are not measurable, then claiming that one has “a belief two-thirds of certainty”²³³ would be meaningless. Noting this problem, Ramsey grants two facts about beliefs. “First, some beliefs can be measured more accurately than others; and, secondly, the measurement of beliefs is almost certainly an ambiguous process leading to a variable answer depending on how exactly the measurement is conducted.”²³⁴ However, Ramsey then notes that similar problems exist in areas which depend on measurement, without sufficiently undermining the meaning of the measurement. The two preceding problems are thus insufficiently severe to prevent the development of a coherent model of probabilistic belief.

Ramsey’s model rests on a few necessary abstractions. First, any model of belief must “assign to any belief a magnitude or degree having a definite position in an order of magnitudes; beliefs which are of the same degree as the same belief must be of the same degree as one another, and so on.”²³⁵ The range of values that Ramsey uses for such a model is from 0 to 1. A degree of belief of 1 in p denotes a full belief in p , a degree of

²³¹ Ramsey, “Truth and Probability,” 166.

²³² *Ibid.*

²³³ *Ibid.*

²³⁴ *Ibid.*, 167.

²³⁵ *Ibid.*, 168.

belief of 0 in p denotes a full belief in $\sim p$, and a belief of .5 in p denotes “equal beliefs in the proposition and its contradictory.”²³⁶

However, Ramsey notes that there is an ambiguity in what it might mean to say that one has, for example, a $2/3$ degree of belief in p . There are two options which he considers. First, Ramsey considers, but ultimately rejects, the claim that “the degree of a belief is something perceptible by its owner; for instance that beliefs differ in the intensity of a feeling by which they are accompanied, which might be called a belief-feeling or feeling of conviction, and that by the degree of belief we mean the intensity of this feeling.”²³⁷ The reason why Ramsey rejects such a view is that “the beliefs which we hold most strongly are often accompanied by practically no feeling at all; no one feels strongly about things he takes for granted.”²³⁸ My belief in the law of non-contradiction, for example, rarely elicits strong emotion in me, even though I hold such a belief so strongly that I consider the law self-evidently true.

The second alternative, and the one which Ramsey endorses, is that a “degree of a belief is a causal property of [the belief], which we can express vaguely as the extent to which we are prepared to act on [the belief].”²³⁹ Note that this is the extent to which we are *prepared* to act on our beliefs, rather than the extent to which we *do* act – “it is not asserted that a belief is an idea which does actually lead to action, but one which would lead to action in suitable circumstances; just as a lump of arsenic is called poisonous not

²³⁶ Ramsey, “Truth and Probability,” 168.

²³⁷ *Ibid.*, 169.

²³⁸ *Ibid.*

²³⁹ *Ibid.*

because it actually has killed or will kill anyone, but because it would kill anyone if he ate it.”²⁴⁰

As a heuristic to measure such a willingness, Ramsey turns to betting. The lowest odds one will accept on a bet on p would represent one’s degree of belief in p .²⁴¹ Note, however, that this is a *heuristic*, and not a complete model; special considerations (such as willingness to bet) are ignored on this view. Nonetheless, the analogy between degrees of belief and betting is insightful insofar as both allow for a continuous, quantified range of options in which the belief can be expressed – just as one might accept a bet at 2 to 1 odds but not accept a bet at 3 to 1 odds, so too would a degree of belief in p at $2/3$ not require or entail a degree of belief in p at $3/4$.²⁴²

Given this model, the mystery of the preponderance of the evidence can be solved. What matters is the judge’s degree of belief. More specifically, what matters is that the judge’s degree of belief that the defendant is liable exceed .5. Yet “the defendant” is to be read *de re*, as per section B. What is required is that the judge’s degree of belief exceed .5, and that the belief in question be a justified *de re* belief about a defendant. Thus, combining the two sections together, the preponderance of the evidence is met if and only if there is an x such that the factfinder’s degree of belief that the x is liable exceeds .5.²⁴³ Using the earlier notation and letting “ $DOB_S(p)$ ” stand for “ S ’ degree of belief about p ,” a formalization of the standard would be as follows:

²⁴⁰ Ramsey, “Truth and Probability,” 170.

²⁴¹ *Ibid.*, 172.

²⁴² While there are other accounts of how partial belief functions, they are beyond the scope of this thesis.

²⁴³ Note that this definition does not easily apply to market share liability type cases. This consideration is taken up in the last section of the chapter.

Preponderance of the evidence (excluding market share liability and similar types of cases): preponderance of the evidence is met iff $\exists x(B_J(Lx)) \& DOB_J(L(x)) > .5$

Note that the introduction of the concept of degrees of belief does not undermine the use of possible worlds, and vice versa. The marriage between the Ramseyan model of degrees of belief and the *de re/de dicto* distinction need not be an unhappy one. To see this, let us return to the notation used in the example of Al, Bernard, Carl, and dictators.

As before, let us suppose that we have the following possible worlds:

$$W_1 = \{D(a), \sim D(b), \sim D(c)\}$$

$$W_2 = \{\sim D(a), D(b), \sim D(c)\}$$

$$W_3 = \{\sim D(a), \sim D(b), D(c)\}$$

As before, the *de dicto* claim that $\Box \exists x(D(x))$ is true, while the *de re* claim that $\exists x(\Box D(x))$ is false. If I have access to all relevant information and I am rational, my degree of belief in $\Box \exists x(D(x))$ would be quite high, while my degree of belief in $\exists x(\Box D(x))$ would be quite low. In fact, insofar as the *de dicto* proposition is tautologically true (given the possible worlds under consideration), while the *de re* proposition is tautologically false (given the possible worlds under consideration), it would be rational for my degrees of belief to be 1 and 0, respectively.

In the context of the courtroom, consider the following case in which a is the defendant at a civil trial. The judge considers three possible worlds, where “L(a)” denotes “a is liable.”

$$W_1 \{L(a)\}$$

$$W_2 \{L(a)\}$$

$W_3 \{ \sim L(a) \}$

The defendant, *a*, is liable in over half the worlds but is not individuated *de re*. Only if we were to eliminate W_3 as a possible world would the *de re* proposition that $\exists x \Box (L(x))$ be true. Yet the fact that *a* is liable in over half the possible worlds does *not* entail that the justified degree of belief about the *de re* proposition also exceed .5. Degrees of belief do not represent possible worlds, but the mental state of the person whose belief it is. The proportion of possible worlds is not what is important for liability, but the strength the judge has in the *de re* belief.

Another worry is that the Ramseyan model of partial belief is incompatible with modal beliefs. After all, the betting heuristic only works insofar as one eventually receives a payout. However, given that one cannot access all possible worlds, modal beliefs would never receive a payout – there would never be a state of affairs which can verify *de re* or *de dicto* propositions which invoke modality. However, note that Ramsey’s invocation of betting is a heuristic, and not the sum total of how degrees of belief may be quantified. Indeed, given that a degree of belief of .5 in *p* entails “equal beliefs in the proposition and its contradictory.”²⁴⁴ Thus, given that a degree of belief represents the willingness to act on the belief, to have a degree of belief over .5 on *p* would simply entail that one is more willing to act on *p* than to act on $\sim p$. Thus, having a belief which meets the preponderance of the evidence would simply mean that the factfinder is more willing to act on the belief than to act on its contradiction. Given that

²⁴⁴ Ramsey, “Truth and Probability,” 168.

this account does not invoke the heuristic of betting, questions about modality do not apply.

To recap, then, the preponderance of the evidence requires that the factfinder have a degree of belief in a proposition that exceeds .5. This proposition, however, cannot be any proposition whatsoever, but rather a proposition which individuates the defendant *de re*.

To see how this accounts for the discrepancy in verdicts, suppose that, as previously stated, the A version of Red Cab features eyewitness testimony and the B version features purely statistical evidence. Let $B_E(p)$ = the eyewitness (E) believes that p , $L(x) = x$ is liable, and that $R(x) = x$ is a red cab. Given the eyewitness testimony, the following is true:

$$(\exists x) B_E(R(x) \ \& \ L(x))$$

Furthermore, we know that all and only those cabs that are red belong to Red Cab Company. Formalizing this, let r = Red Cab Company, $O(x,y) = x$ owns y . Thus:

$$\forall x (R(x) \leftrightarrow O(r,x))$$

Given that only those epistemically accessible possible worlds which are compatible with the evidence need to be considered, we can rule out possible worlds in which the eyewitness lacks this belief.

Given the somewhat more difficult task of formalizing the preponderance of the evidence, the easier task of formalizing beyond a reasonable doubt remains. Unlike the preponderance of the evidence, there is considerable controversy about which quantification most accurately encapsulates the burden of proof, or even whether

reasonable doubt can be quantified. If it is the case that reasonable doubt can be quantified, such thresholds often hover around .9 to .95.²⁴⁵ Thus, the formalization of beyond a reasonable doubt would look a lot like the formalization of the preponderance of the evidence. In particular, on this view, the prosecution meets the criminal standard of beyond a reasonable doubt if and only if there is an x such that for all y , if y is a factfinder at the trial,²⁴⁶ then the degree of belief that y assigns to the proposition that x is guilty exceeds .9 (or .95 if one is applying the more stringent threshold). Let $G(x)$ = “ x is guilty,” $B_J(p)$ = “a juror believes that p ,” and $J(x)$ = “ x is a juror” Thus,

Beyond a reasonable doubt (quantified version): beyond a reasonable doubt is met iff $\exists x \forall y (J(y) \rightarrow (B_J(Gx)) \ \& \ DOB_J > .9.)$

If, on the other hand, Moss is correct that there is something “elusive” about reasonable doubt, then the invocation of a specific degree of belief is not beneficial to understanding the standard. In this instance, the formalization of the standard would thus not need to be quantified in such a precise manner. The worry, however, is that a belief-based view of legal standards would be unable to account for the elusiveness of legal proof. However, recent work in epistemology²⁴⁷ suggests that beliefs may *also* be context-sensitive in the same way that knowledge and legal proof are on Moss’ view. Just as a change in context may undermine knowledge, so too may it undermine *belief* as well. Indeed, philosophical examples of the former resemble philosophical examples of the latter.

²⁴⁵ Georgi Gardiner, “The Reasonable and the Relevant: Legal Standards of Proof,” 289.

²⁴⁶ Note that in criminal trials, a jury consists of multiple members, and thus there are multiple relevant subjective probabilities, hence the need for the universal quantifier.

²⁴⁷ For a brief overview of literature which argues that beliefs can be context and/or stake sensitive, see Brad Armendt, “Stake-Invariant Belief,” *Acta Analytica* 23, no. 1 (2008): 29-43.

The archetypical example of the claim that pragmatic interests can influence what counts as knowledge, known as “pragmatic encroachment,” comes from Jeremy Fantl and Matthew McGrath’s “Evidence, Pragmatics, and Justification.”²⁴⁸ The two imagine two permutations of a scenario in which one finds oneself at a train station, asking if the incoming train stops at minor stops in between major destinations.²⁴⁹ In the first permutation of the thought experiment, the passenger has no pressing preference for a train that makes the stops or for a train which goes to the destination directly. When the passenger hears that the train does make the stops at the smaller stations, he has no suspicion that the answer is false.

In the second permutation, however, the passenger has a pressing need to be at the larger destination as soon as possible. When asking if the train stops at the smaller stations on the way, he (as before) hears that the incoming train does make the stops. However, the stakes introduce doubts: “Maybe the ticket-seller misunderstood his question. Maybe he misunderstood the answer. Who knows when he bought the ticket? I don’t want to be wrong about this. I’d better go check it out myself.”²⁵⁰ As a matter of intuition, Fantl and McGrath claim that the evidence in the first permutation of the case is sufficient to know that the train stops at the smaller stations. However, they also assume that the evidence does *not* justify knowing in the second permutation of the case. The introduction of doubt in the second permutation, in Moss’ terms, undermines the elusiveness of the knowledge.

²⁴⁸ Jeremy Fantl and Matthew McGrath, “Evidence, Pragmatics, and Justification” *The Philosophical Review* 111, no. 1 (2002): 67–94.

²⁴⁹ *Ibid.*, 67-8.

²⁵⁰ *Ibid.*, 68.

A thought experiment in favor of the idea that some beliefs are stake-sensitive comes from Brad Armendt's "Pragmatic Interests and Imprecise Belief."²⁵¹ Armendt's example is also bipartite:

"You are in a conversation with a student, who asks you: in which part of his paper on truth and probability did Ramsey give that example about the unwholesome yellow toadstools? After a moment, you reply: in the last section of the paper, on the 'logic of truth'. Soon after the student leaves your office, the phone rings. A local radio station invites you to play their quiz game. The prize for a correct answer to their question is valuable—a fabulous overseas vacation, let us say—and they offer you several subjects to choose among. You pick 'probabilism', and amazingly enough, they ask the very same question. Now you think a little longer; it seems like it was the last section of the paper, but could it have been earlier when Ramsey was talking about beliefs and frequencies?"²⁵²

Note that when the game show asks the question, the stakes are high enough that the professor is beset by doubts. These doubts lower the degree of belief that the professor has in the proposition that the last section contains the toadstool example. But besides the quantitative degree of belief that one can have regarding a proposition, there are also doxastic mental states (e.g., belief, doubt, certainty, etc.) which Armendt calls *categorical beliefs*.²⁵³ In the toadstool example, the professor's belief when responding to the student is categorically different from the mental state (viz. doubt) which he has when on the game show.

The preceding thus shows that there are some beliefs which may be stake and context sensitive in the same way that knowledge can be. If there is a stake-sensitivity to beliefs, then this can help explain how belief can also be "elusive" in a similar manner to

²⁵¹ Brad Armendt, "Pragmatic Interests and Imprecise Belief" *Philosophy of Science* 80, no. 5 (2013):758-768

²⁵² *Ibid.*, 758.

²⁵³ *Ibid.*, 760.

knowledge. Given this, one may formalize reasonable doubt without reference to quantification:

Beyond a reasonable doubt (quantified version): beyond a reasonable doubt is met in some context c and some stake s if and only if in c and s ,
 $\exists x \forall y (J(y) \rightarrow (B_J(Gx)))$.

Note that in both formulations of the standard of beyond a reasonable doubt, the placement of the universal quantifier requires that *all* jurors have the same referent of the belief. If, for example, eleven jurors believe that Timothy is guilty of arson, but the twelfth lacks this belief for whatever reason (maybe she believes that it was not Timothy, but Henry, who was guilty of arson, or maybe the referent of her belief “someone is guilty of arson” is to be read *de dicto*), the single holdout is enough to prevent a conviction.

Pre-Emptying Objections

There are several other odds and ends with which the theory must grapple. This section deals with seven possible objections and limitations to the thesis.

Market Share Liability

First, while the jury’s belief should be a belief that is read about the defendant *de re*, this does not apply for certain types of cases such as market share liability cases. In these cases, “liability is assigned according to the market share a particular company had.”²⁵⁴ In such cases, one might claim that liability is established *de dicto*: the court rules that whosoever has x percent of a market share, regardless of who it is, is liable for x percent of the damages. However, as Blome-Tillmann notes, “in successful cases of

²⁵⁴ Blome-Tillmann, “‘More Likely Than Not’,” 10.

market share liability the negligence of the defendant companies has usually been established independently.”²⁵⁵ While the determination of the punishment in cases of market share liability may occur *de dicto*, the initial finding that the companies meet the threshold for negligence is found *de re*.

Outlier Cases

A second fact worth noting is that while the following holds for most cases, the nature of common law allows for a relatively large degree of autonomy on part of the judges. Thus, idiosyncratic cases will arise, in which the general trend of bare statistical evidence being insufficient for a liable or guilty verdict is bucked. *Kramer v. Weedhopper* is one such case – courts generally rule in favor the defendant when the prosecution’s argument for liability relies solely upon bare statistical evidence.²⁵⁶ The ruling in *Kramer* is thus faulty due to juridical autonomy and does not point to any epistemic deficiency in the Wells Effect.

The Role of DNA Evidence

Third, as previously mentioned, there are types of evidence which are not clearly individual or statistical. The blood in Kaye and Freedman’s example is one such instance, but DNA evidence is another type of evidence which could plausibly be seen as either individual or as purely statistical. Sine of the discrepancy here stems from the fact that part of the burden of admissibility of DNA evidence rests on proving that the evidence

²⁵⁵ Ibid.

²⁵⁶ See *Galvin v. Eli Lilly and Co.*, 488 F.3d 1026 (2007), on 1034-5.

was collected in a scientifically proper manner.²⁵⁷ To that end, DNA evidence can resemble expert testimony as specified in Fed. R. Ev. 702 rather than lay testimony as specified in Fed. R. Ev. 701. This may point to the claim that in some instances, DNA evidence is not similar enough to other types of individual evidence (e.g., eyewitness testimony) to treat it as individual evidence. However, some of the discrepancy in rulings based on DNA evidence, then, is due to the fact that DNA evidence does not individuate the defendant in some instances (most notoriously in *The People v. O.J. Simpson*), while DNA evidence *does* individuate the defendant in other instances. One such example of DNA evidence helping to individuate a defendant is *State v. Abdelmalik*, in which the DNA left at the scene of a murder “matched Abdelmalik in a profile that would occur only once in one quintillion individuals.”²⁵⁸ Yet this was not the sum total of the evidence presented against Abdelmalik. Further evidence which individuated Abdelmalik were the facts that “in 1980, Abdelmalik worked at locations near the victim's apartment and had friends that lived on her street. During questioning, he admitted that [the victim's] apartment building looked familiar. He initially acknowledged that [the victim] looked familiar to him but later stated that he had no memory of her name or face.”²⁵⁹ While the base evidence still requires the use of proper statistics and forensics, if handled properly, DNA evidence can, in instances like *Abdelmalik*, help to individuate a specific individual. Thus, DNA evidence is not wholly individual evidence nor is it wholly purely statistical –

²⁵⁷ American Bar Association, “DNA Evidence,” in *ABA Standards for Criminal Justice*, Third ed. (Washington, D.C., American Bar Association, 2007): Standard 5.1, 95-102. Accessed via https://www.americanbar.org/content/dam/aba/publications/criminal_justice_standards/dna_evidence.pdf

²⁵⁸ *State v. Abdelmalik*, 273 S.W.3d 61 (2008), on 64.

²⁵⁹ *Ibid.*

rather, the specific instance in which DNA evidence is presented determines whether it is one or the other.

An Account of False Convictions

A fourth objection might concern how false convictions occur on this account. As an unfortunate fact about our legal system, judges and juries sometimes get things wrong, and thus any epistemic account of the role of evidence in legal proceedings needs to grapple with this fact. However, note that we are talking about *beliefs*, and not knowledge. Unlike knowledge, beliefs need not be factive – false beliefs are nonetheless still beliefs. Among those types of beliefs that can be false can be beliefs about the referent of a belief. To turn to an example from Kripke, it was relatively common to believe that Einstein was the inventor of the atomic bomb, when in fact he was not.²⁶⁰ Suppose that somebody, let's call him Steve, falsely believes that Einstein was the inventor of the atomic bomb. If we let S refer to Steve, and I(x) stand for “x is the inventor of the atomic bomb,” and e stand for “Einstein,” we can formulate the following truths:

$\sim I(e)$

$B_S(I(e))$

But note that the latter individuates a referent of the belief, and thus implies that Steve believes that someone, namely Einstein, was the inventor of the atomic bomb.

Thus,

$\exists x(B_S(I(x)))$

²⁶⁰ Kripke, *Naming and Necessity*, 85.

Yet this is just the formalization of a *de re* belief. Thus, *de re* beliefs can be false.

Returning to the courtroom, there are two relevant ways in which a *de re* belief can become false. In the former, the eyewitness' testimony is misperceived. If, in the example of the A version of Red Cab, the eyewitness perceives the cab to be red when it is really green, this would count as an example of this type. The eyewitness fixes the wrong referent in his belief, by assigning the definite description "x caused Mrs. Smith's accident" to a red cab, when in fact it was a green cab that did so. After fixing the wrong referent, the eyewitness then passes the faulty link onto the jury/judge. A second, less common way in which false beliefs can be passed on is due to difficulties in communication. In these cases, the eyewitness may form a true belief, but somehow fail to pass on the referent in the causal chain, just as it is possible to fail to pass on the referent of a proper name.

How is the Reliability of Eyewitness Testimony Determined?

One further worry about the reliability of eyewitness testimony is the way in which the reliability is determined.²⁶¹ Suppose, for instance, that the eyewitness in the A version of the Red Cab Case is named Miller. The studies which state that eyewitness testimony is often fallible is not about Miller specifically, and would thus constitute bare statistical evidence for the proposition that Miller's eyewitness testimony is unreliable. But if bare statistical evidence is insufficient to justify a *de re* belief, then these studies would not justify the proposition that Miller's testimony is false. How, then, would the probative value of Miller's testimony be determined?

²⁶¹ This objection comes from Brad Armendt.

The answer, in short, is that bare statistical evidence would not be used in a legal case to question the competency of a witness. Federal Rule of Evidence 601 states that all witnesses are deemed sufficiently competent to testify “unless these rules [i.e., the Federal Rules of Evidence] provide otherwise.”²⁶² While attacking the credibility of the witness is allowed, the witness is still allowed to testify as to “what the witness thinks he knows from personal perception.”²⁶³ Thus, undermining the witness’ credibility must be done in a manner that deals with a specific witness himself, and not merely dealing with eyewitness testimony in general. Examples of doubts which may undermine credibility in eyewitness testimony include, in the example of Miller, questions regarding whether Miller is colorblind, requires a strong eyeglasses prescription,²⁶⁴ saw the incident only peripherally, was intoxicated when seeing it, and so on. These types of concerns, however, are merely the types of concerns which deal with eyewitnesses *de re*, and not *de dicto*. Yet the rule requires that one undermine the credibility of *the witness*, and not witnesses writ large. As such, using bare statistical evidence to undermine the credibility of a specific eyewitness would be a rare sight in a courtroom.

Limits of Pragmatism and Contextualism

A second concern regards the limits of contextualism on the *de re* view.²⁶⁵ While this account is less contextualist than Moss’ view, it still has some contextual components. One such problem occurs in the use of DNA evidence. As *Abdelmalik*

²⁶² Fed. R. Ev. 601

²⁶³ Fed. R. Ev. 602, Notes of Advisory Committee on Proposed Rules,
<https://uscode.house.gov/view.xhtml?path=/prelim@title28/title28a/node218/article6&edition=prelim>

²⁶⁴ The wonderful 1992 film *My Cousin Vinny* features an attorney (played by Joe Pesci) undermining the credibility of an eyewitness on these very grounds.

²⁶⁵ This objection comes mainly from Ángel Pinillos and Brad Armendt.

shows, the probability of the DNA belonging to Abdelmalik is still statistical, even if the probability is absurdly high. The problem, more fully detailed, is this: what is the pragmatic contextual difference between statistical evidence as used in *Abdelmalik* when compared to the B version of Prisoners? If, for example, 999 out of 1,000 attendees gatecrashed, would that be enough to rule a randomly selected attendee liable for gatecrashing.

To this there are two answers: one epistemic and one legal. The more philosophically interesting claim is that the content of the beliefs which are justified by the evidence differ. The DNA evidence is used to justify a belief about Abdelmalik *de re*, and not about any person *de dicto*. On the other hand, the bare statistic in the B version of Gatecrashers is not about any specific attendee *de re*, and thus does not justify a *de re* belief.

The second, legal answer is that much of the context is determined by the judge adjudicating the trial. Rule 403 of the Federal Rules of Evidence allows the court to exclude otherwise relevant evidence “if its probative value is substantially outweighed by a danger of... unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence.”²⁶⁶ The court, then, has the power to determine (within reasonable limits) whether, in a given context, the probative value of admitting a piece of evidence is outweighed by “the harm likely to result from its admission.”²⁶⁷ The full response to questions about contextualism, then, focus both on the

²⁶⁶ Fed. R. Ev. 403

²⁶⁷ Fed. R. Ev. 403, Notes of Advisory Committee on Proposed Rules,
<https://uscode.house.gov/view.xhtml?path=/prelim@title28/title28a/node218&edition=prelim>

context itself *and* the judge who determines where such a context justifies the exclusion of a given piece of evidence.

Can Bare Statistical Evidence Justify a *De Re* Belief?

One final challenge to the thesis is the claim that there are certain instances in which bare statistical evidence is sufficient to justify a *de re* belief. This is alleged to be the case when the statistic shows that *all* or *none* of the members of a given set have a certain property. One such instance is, allegedly, as follows:

The Rampaging Horde of Gatecrashers. Emma is on trial for gatecrashing. The sum total of the relevant evidence is as follows. At a given rodeo, all 1,000 attendees gatecrash – absolutely none of the attendees paid to enter. Furthermore, a photograph of the event shows Emma sitting in the stadium during the rodeo. Finally, there are no records of Emma working at the rodeo, and thus her presence cannot be explained by claiming that she worked at the unfortunate stadium.

Based on this evidence, the following argument holds:

1. All rodeo attendees gatecrashed. (Assumption)
2. Emma attended the rodeo. (Assumption)
3. Emma gatecrashed. (1, 2, Universal instantiation)

If one were to believe that Emma gatecrashed, this would constitute a *de re* belief, as it is about Emma in particular. Note, however, that while the bare statistic that 100 percent of the attendees of the gatecrash is *necessary* to deduce that Emma gatecrashed, it is not *sufficient*. The second premise, that Emma attended the rodeo, needs to be established.

Yet the second premise is not justified by the bare statistical evidence alone – the photograph establishes it. Because the photograph does not constitute bare statistical evidence, it is not bare statistical evidence alone which justifies the belief.

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