

Legal Evidence and Knowledge

The Routledge Handbook of the Philosophy of Evidence

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In 1902 the Supreme Judicial Court of Maine filed an influential legal verdict. The judge claimed that in order to find a defendant culpable, the plaintiff “must adduce evidence other than a majority of chances”. The judge thereby claimed that bare statistical evidence does not suffice for legal proof.

In this essay I first motivate the claim that bare statistical evidence does not suffice for legal proof. I then introduce and motivate a knowledge-centred explanation of this fact. The knowledge-centred explanation rests on two premises. The first is that legal proof requires knowledge of culpability. The second is that one cannot attain knowledge that p from bare statistical evidence that p . To motivate the second premise, I suggest that beliefs based on bare statistical evidence fail to be safe—they could easily be wrong—and bare statistical evidence cannot eliminate relevant alternatives.

I then cast doubt on the first premise; I argue that legal proof does not require knowledge. I thereby dispute the knowledge-centred explanation of the inadequacy of bare statistical evidence for legal proof. Instead of appealing to the nature of knowledge, I suggest we should seek a more direct explanation by appealing to those more foundational epistemic properties, such as safety or eliminating relevant alternatives.

1. Legal judgement: “He must adduce evidence other than a majority of chances.”

On February 6th 1941 Betty Smith was driving from Dorchester to Winthrop, Massachusetts. At about 1am she was heading west on Main Street in Winthrop, when a bus forced her to swerve into a parked car. She was injured in the collision. Smith was unable to see details about the bus, except it was “a great, big, long wide affair”. She later discovered that only one company, Rapid Transit, Inc., had a route along that street. A second company operated elsewhere in town. Smith discovered, furthermore, Rapid Transit’s schedule included a service from Winthrop Highlands to Maverick Square, departing at 12:10am, 12:45am, 1:15am, and 2:15am. This route was 30 minutes long, and passed the location of the accident. With this inculpatory evidence, Smith sued Rapid Transit.

The judge ruled that Smith’s case could not proceed to jury trial and thereby ruled in favour of Rapid Transit. He reasoned that there was no “direct evidence” that the speeding bus was operated by Rapid Transit. Smith appealed. The Massachusetts Supreme Judicial Court upheld the judge’s decision, saying:

While the defendant had the sole franchise for operating a bus line on Main Street, Winthrop, this did not preclude private or chartered buses from using this street; the bus in question could very well have been operated by someone other than the defendant... The most that can be said of the evidence in the instant case is that perhaps the mathematical chances somewhat favor the proposition that a bus of the defendant caused the accident. This was not enough.¹

¹ Smith v. Rapid Transit, Inc. 317 Mas. 469, 58 N.E.2d 754 (1945).

The judges that ruled the evidence Smith adduced could not satisfy the legal standard governing civil litigation. This is somewhat puzzling. The relevant standard is “preponderance of evidence”, also known as the “balance of probabilities”. This is frequently glossed as satisfied if the evidence establishes the litigated claim is more likely true than not.² Whilst it is possible that a private or chartered bus was involved, as the appellate judge notes, surely the likelihood does not approach fifty percent; it is overwhelmingly more likely that the speeding bus belonged to Rapid Transit. In our ordinary understanding, it seems Smith’s evidence establishes Rapid Transit’s culpability to a preponderance of the evidence.

The *Smith* ruling draws on an earlier verdict, *Day v. Boston & Maine Railroad*, which is even more explicit:

[The litigated claim] may be quantitatively probable... Quantitative probability, however, is only the greater chance. It is not proof, nor even probative evidence, of the proposition to be proved... However confidently one in his own affairs may base his judgment on mere probability as to a past event, when he assumes the burden of establishing such event as a proposition of fact as a basis for a judgment of a court he must adduce evidence other than a majority of chances... Verdict set aside.³

The judge claims that evidence that merely renders a claim quantitatively probable, but does not provide proof, might suffice for action in ordinary life. But, he claims, such evidence cannot support an affirmative verdict—that is, a finding of culpability—in legal proceedings. Legal proceedings engender distinctive demands about evidence.

This raises questions: Are these judges mistaken? Do legal proceedings require different kinds of evidence from everyday life, and—if so—why? What is the legal conception of evidence, and how does this differ from non-legal conceptions? This chapter examines whether bare statistical evidence can satisfy legal standards of proof. In section two I introduce two vignettes that, when contrasted, suggest bare statistical evidence does not suffice for legal proof. In section three I introduce and motivate the knowledge-centred explanation of the inadequacy of bare statistical evidence for affirmative legal verdicts. In section four I articulate objections to the knowledge-centred account.

2. Bare statistical evidence: “Quantitative probability, however, is only the greater chance. It is not proof.”

The *Day v. Boston & Maine Railroad* judgement claims:

That in one throw of dice there is a quantitative probability, or greater chance, that a less number of spots than six will fall is no evidence whatever that in a given throw such was the actual result. Without something more, the actual result of the throw would still be utterly unknown. The slightest real evidence that sixes did in fact fall uppermost would outweigh all the probability otherwise. Granting, therefore, the chances to be more numerous..., we still have only the doctrine of chances. We are still without evidence tending to actual proof.⁴

² In re Winship, 397 U.S. at 371–72; House of Lords in *Re B (A Child)* (2008) UKHL 35; *Miller v. Minister of Pensions* [1947] 2 All ER 372; *Simon and Mahan* (1971).

³ *Day v. Boston & Maine Railroad*, 96 Me. at 207, 52 A. (1902).

⁴ *Ibid.* *Day v. Boston & Maine Railroad* and *Smith v. Rapid Transit* do not themselves involve statistical evidence. Other relevant court opinions include *Lampe v. Franklin American Trust Company*, 339 Mo. 361, 96 S.W.2d 710 (1936); *Sargent v. Massachusetts Accident Co.*, 29 N.E.2d 825 (Mass. 1940); *Curtis v. United States*, 117 F. Supp. 912 (N.D. New York, 1953); *Sawyer v. United States*, 148 F. Supp. 877 (M.D. Georgia 1956); *Guenther v. Armstrong Rubber Company*, 406 F.2d 1315 (3d Cir. 1969); *Kaminsky v. Hertz Corp.* 288 N.W. 2d 426 (Mich. Ct. App., 1980).

This court opinion claims probabilistic evidence, such as that pertaining to dice rolls, is “not proof, nor even probative evidence”. The courts instead require “real evidence”. What does this mean? To better see how merely statistical evidence bears on legal proof, let’s turn from civil to criminal proceedings, and consider the following fictional case.⁵

Prisoner One. One hundred prisoners exercise in the yard. Security footage reveals that ninety-nine prisoners riot; one prisoner refuses to participate. Prison officials decide that since each prisoner is 99% likely to be guilty, they have adequate evidence to successfully prosecute individuals for assault. They charge Ryan with assault. A guilty verdict is returned. Ryan did in fact riot.

Prisoner Two. One hundred prisoners exercise in the yard. Ten prisoners attack a guard. A second guard, standing at a substantial distance, believes he saw that Ryan was one of the attackers. Prison officials charge Ryan with assault. A guilty verdict is returned. Ryan did in fact riot.

In many countries, including the US, UK, and Canada, criminal proceedings are governed by the relatively demanding “beyond reasonable doubt” standard. The evidence in Prisoner One highly probabilifies Ryan’s culpability; plausibly the evidence supports a .99 credence that Ryan rioted. But nonetheless the evidence could not properly secure conviction.⁶ It is implausible that we could legitimately blame Ryan for rioting, on this evidence, or assert that he is guilty.⁷ Contrast this with the evidence adduced in Prisoner Two. Eyewitness testimony is notoriously unreliable under many circumstances.⁸ Given this, the claim that Ryan rioted might be less likely true given the factfinder’s evidence, compared to the strong statistical evidence adduced in Prisoner One. But Prisoner Two features the kind of evidence that could warrant an affirmative verdict. Why is conviction inappropriate given the evidence in Prisoner One, but perhaps appropriate given the kind of evidence adduced in Prisoner Two?

3. Knowledge and legal proof: “Without something more... the actual result would still be utterly unknown.”

One natural suggestion holds that inculpatory bare statistical evidence does not suffice for legal judgement because such evidence does not lead to knowledge. The factfinder in Prisoner One cannot know Ryan is guilty—even if he is guilty—because his judgement relies on bare statistical evidence. One way to interpret this suggestion is as advancing two claims, which we can call the knowledge-centred account:⁹

⁵ Based on Nesson (1979: 1192). Gardiner (2019), especially sections “The Proof Paradox” and “Modal Epistemology and the Law”, provide an overview of such examples. Gardiner (ms-a) compares epistemological features of the prisoner vignettes to other similar vignettes employed to motivate the inadequacy of bare statistical evidence for legal proof.

⁶ For the claim that the evidence adduced in Prisoner One cannot, or should not, warrant affirmative legal verdicts, see Tribe (1971), Nesson (1979), Wells (1992), Niedermeier et al. (1999), Koehler (2001), Littlejohn (2017), Blome-Tillman (2017), Pritchard (2017), Gardiner (2018), Moss (2018b), and Ebert et al. (2018). See Brook (1985) for dissent. Roberts (ms) questions how widespread the beyond reasonable doubt standard is. For surveys of the debate about statistical evidence securing legal verdicts, see Gardiner (2019), Di Bello (2013), and Ho (2015).

⁷ Buchak (2014); Littlejohn (2017).

⁸ Loftus (1996); Simon (2012).

⁹ Littlejohn (2017), Blome-Tillman (2017), and Moss (2018b) develop knowledge-based approaches to explain the inadequacy of bare statistical evidence for legal proof, but not this exact approach.

Claim One. Knowledge of culpability is required for appropriate affirmative legal verdicts.

Claim Two. Bare statistical evidence that p , at least of the magnitude exemplified by Prisoner One, does not lead to knowledge that p .

In what follows I first briefly motivate Claim One. I then motivate Claim Two. To support Claim Two, I argue for two features of knowledge: (i) knowledge is incompatible with easy possibility of error and (ii) knowledge requires ruling out relevant error possibilities. In cases like Prisoner One, bare statistical evidence cannot eliminate nearby error possibilities and cannot rule out relevant alternatives. Thus, I argue, the factfinder in Prisoner One lacks knowledge of Ryan's guilt. So far, then, the knowledge-centred account appears promising. But I cast doubt on this account in section four. I articulate reasons for rejecting Claim One: Affirmative legal verdicts do not require knowledge of culpability. This suggests, I conclude, we should not appeal to the nature of knowledge to explain the inadequacy of bare statistical evidence for legal verdicts.

i. Claim One: Affirmative legal verdicts require knowledge.

The knowledge-centred account has appeal. In support of Claim One, knowledge is clearly a paramount epistemic kind. It plays significant roles in thinking, acting, and interacting. A term for “knows” appears in every language and it is one of the most commonly-used verbs.¹⁰ Knowledge plays a central role in epistemological theorising, and so is a natural candidate to explain the insufficiency of bare statistical evidence for legal proof. Indeed the legal decision quoted above itself invokes knowledge: “Without something more, the actual result of the throw would still be utterly *unknown*.” Further evidence for Claim One is that many theorists claim knowledge is required for appropriate assertion and action. They endorse claims like:

Knowledge Norm for Assertion. Assert that p only if you know that p .¹¹

Knowledge Norm for Action. Act on p only if you know that p .¹²

These plausible norms claim a person errs if they assert that p , or act on p , while lacking knowledge that p . And declaring someone criminally culpable and punishing them certainly qualify as assertion and action!

It is plausible, furthermore, that only knowledge can legitimate reactive attitudes such as resentment and blame. High credence—even very high credence—does not license reactive attitudes. Lara Buchak (2014: 299) notes, “While reactive attitudes do come in degrees, the degree of blame I assign to a particular agent is based on the severity of the act, not on my credence that she in fact did it.” We cannot half-blame someone on a middling credence that she acted wrongly; plausibly blame requires knowing the person acted wrongly. This idea suggests the following norm:

Knowledge Norm for Blame. Blame someone only if you know that she transgressed.

It certainly sounds unpalatable for a nation to punish citizens even when it does not know whether they are guilty! Thus, Claim One appears plausible.

¹⁰ Wierzbicka (2006, §2.5); Nagel (2014).

¹¹ Williamson (2000, Ch. 11); Hawthorne (2004: 23).

¹² Hawthorne and Stanley (2008: 577); Anderson (2015).

ii. Claim Two: Bare statistical evidence is not knowledge-conducive.

Claim Two, which holds that bare statistical evidence that p —at least of the magnitude exemplified by Prisoner One—does not lead to knowledge that p , also enjoys wide support. It will be helpful to introduce some terminology. Suppose Timmy believes, because his mother told him, that a new Bond film will be released in December. Garry believes this claim through divination. We can say that Timmy's evidence is *knowledge-conducive*. Testimony about mundane topics from trusted sources is typically a reliable source of information. It is the kind of evidence that can, in principle, support knowledge. As long as circumstances are normal—Timmy's mother is not lying, Timmy has basic requisite epistemic virtues, and so on—then Timmy attains knowledge. Garry's evidence, by contrast, is not knowledge-conducive. Even in the “good” case, where his belief is true, Garry cannot come to know on this evidential basis. Garry's evidence is not reliable and is not a good reason for belief. Equipped with this terminology, we can say that Claim Two denies that bare statistical evidence is knowledge-conducive; bare statistical evidence that p , at least of the magnitude in Prisoner One, does not lead to knowledge that p , even when it leads to true belief. But note that, unlike divination, bare statistical evidence can reliably lead to true belief. Given the statistical evidence in Prisoner One, for example, Ryan probably did riot. So why deny bare statistical evidence is knowledge-conducive?

In support of Claim Two, consider a fair lottery. There are 10,000 tickets, and the winner is drawn but not yet announced. Lottie reflects on the available statistical evidence—her ticket has only a 0.01% chance of winning—and so believes that her ticket has not won. Her belief is true. Is Lottie's true belief, based on bare statistical evidence, knowledge? Many epistemologists say no.

One reason for thinking Lottie lacks knowledge is that her belief, based on bare statistical evidence, could easily be wrong.¹³ There is a nearby error possibility; a significant risk of false belief. And if a belief could so easily be wrong, the thought continues, it is not knowledge. Knowledge enjoys a kind of stability. And Lottie's merely statistical evidence cannot provide this stability. Recall the dice in *Day v. Boston & Maine Railroad*: “That in one throw of dice there is a quantitative probability, or greater chance, that a less number of spots than six will fall is no evidence whatever that in a given throw such was the actual result.” A person who, using bare statistical evidence, believes that a thrown die will not land six is likely correct. Their belief has an 83% chance of being true. But nonetheless the belief could easily be wrong. We cannot rely on the claim being true, since it might easily not be. The world need not be very different for the die to land six; the outcome is not at all remote. This close possibility of error seems inconsistent with knowledge.

We can contrast the evidence available to Lottie with evidence that is knowledge-conducive. Millie asks people what their middle names are. Based on Jim's testimony, Millie correspondingly truly believes Jim's middle name is David. There is some chance, given Millie's evidence, that her belief is false. Some people lie or are mistaken about their middle names. Perhaps their first and middle names were switched during childhood and they ignore this when reporting. Or perhaps they have multiple middle names and only report one. They might have two last names, but for simplicity report one as a middle name. Or they might omit a middle name that is disliked or evokes estranged relatives. Perhaps the likelihood of error, given Millie's evidence, is above 0.01%. That is, perhaps if Millie asked

¹³ Sosa (1999), Williamson (2000), Hawthorne (2004: 56), Pritchard (2005), and Dutant (2016) discuss the claim that knowledge is incompatible with easy possibility of error. Gardiner (ms-a) argues that, even though Lottie's lottery belief could easily be wrong, some beliefs based on bare statistical evidence are modally secure. I thereby dispute the safety-based explanation of the inadequacy of bare statistical evidence for legal proof.

10,000 people more than one would reply inaccurately. But nonetheless this is the kind of evidence that can support knowledge, at least in principle. If Jim tells the truth, then typically Millie comes to know Jim's middle name. In other words, Millie's evidence—testimony about a person's middle name—is knowledge-conducive.

This contrast suggests the reason Lottie's evidence is not knowledge-conducive is not simply the probabilistic likelihood of error. Millie's evidence is also fallible, yet is knowledge-conducive. Instead, the thought goes, the deficiency of Lottie's evidence is the very close possibility of error. Not much must change for her belief to be false. It could easily happen. But with Millie's evidence, by contrast, error is a more distant possibility. The world would have to be rather different for Millie's belief to be false. (Jim would have to have lied, rather than tell the truth, for example, which is a significant difference.)

Some epistemologists demur. They hold Lottie can know, via statistical evidence, that her ticket has lost.¹⁴ (The received view holds Lottie cannot know.) After all, Lottie is 99.99% likely to be correct, given her evidence. But note that if we reduce the size of the lottery, it becomes even less plausible that Lottie knows her ticket lost. If the lottery is small enough, *everyone* agrees Lottie lacks knowledge. After all, a coin toss is the limiting case of a fair lottery. There are only two "tickets", one of which wins.¹⁵ And no one—not even a committed pessimist—will claim that, just by reflecting on the odds, you know that you lost a coin toss!

The Prisoner One vignette can be understood as epistemically akin to a 100-ticket lottery—albeit with morally significant outcomes.¹⁶ It is highly implausible one can know a ticket has not won a 100-ticket lottery merely by reflecting on the odds. Given the evidence, the factfinder could easily be wrong about Ryan's guilt. Indeed, were he to repeat the process for every prisoner, false conviction is guaranteed. This easy possibility of error supports Claim Two: bare statistical evidence is not knowledge-conducive.¹⁷

A second consideration supporting Claim Two is that if a person knows *p*, she can rule out relevant error possibilities.¹⁸ Suppose Linda observes a bird and believes it is a house sparrow. Does Linda's belief qualify as knowledge? Plausibly this depends on Linda's abilities at discriminating house sparrows from other birds. If Linda cannot tell a house sparrow from a house wren, house finch, or rose-breasted grosbeak, then intuitively she does not know the bird is a house sparrow. This is because when she sees the bird and forms the belief she cannot rule out other relevant possibilities, such as the bird's being a house wren. If Linda is an experienced birdwatcher who can visually discriminate

¹⁴ Hill and Schechter (2007); Reed (2010); Sosa (2015: 120).

¹⁵ Unfair lotteries, with weighted tickets, can produce a greater than 50% chance of winning.

¹⁶ If Lottie lacks knowledge with her overwhelming statistical evidence (1:10,000), this strongly suggests the Prisoner One evidence is not knowledge-conducive, since that statistical evidence is far weaker (1:100). Note Gardiner (ms-a) critically evaluates the claim that Prisoner One is epistemically akin to a lottery.

¹⁷ Claim Two specifies that bare statistical evidence, at least of the magnitude in Prisoner One, is not knowledge-conducive. Perhaps extremely high statistical evidence—evidence indicating *p* is 99.99999999% likely—can underwrite knowledge. But such magnitudes do not arise in prisoner vignettes or ordinary lotteries.

¹⁸ For early influential treatments, see Austin (1946), Dretske (1970), Stine (1976), Goldman (1976), Cohen (1986), and Lewis (1996). See also Vogel (1999), Lawlor (2013), McKinnon (2013), Gerken (2017), and Ichikawa (2017). Rysiew (2006) emphasises the plausibility of a Relevant Alternatives Condition. Ho (2008), Amaya (2015), Moss (2018a, 2018b), and Gardiner (ms-b, ms-c) appeal to a relevant alternatives framework to explain the inadequacy of bare statistical evidence for verdicts.

house sparrows from other birds, then Linda does know. But, the thought continues, Linda need not be able to rule out every other possibility. She need not be able to distinguish house sparrows from lifelike robots, Cartesian demon illusions, or computer simulations. In ordinary cases, these error possibilities are irrelevant to whether Linda knows the bird is a house sparrow.

Reflecting on Linda suggests the following necessary condition on knowledge:

Relevant Alternatives Condition. S knows that p only if S can rule out relevant alternatives to p.

This condition includes three major components: alternatives, relevance, and ruling out. The first of these is relatively straightforward. An alternative, A, is a claim incompatible with the target belief, p. If A is true (the bird is a wren), then p is false (the bird is not a sparrow). The other two components are more controversial. *Relevant* alternatives are those error possibilities that cannot be properly ignored. We have some intuitive grasp on which alternatives are relevant: The possibility that Linda observes a bird other than a house sparrow cannot be properly ignored. The lifelike robot possibility can, in normal cases, be properly ignored.¹⁹ Plausibly, an error possibility cannot be properly ignored if the available evidence suggests the error possibility obtains. If the bird looks like a wren, for example, this is a relevant possibility. Similarly, plausibly an error possibility is relevant if it is believed or is being seriously considered by the subject. If Linda wonders whether the bird is a wren, for example, this error possibility is relevant.

The third component, ruling out, is also controversial. We can gloss ruling out an alternative as having some evidence that discriminates the truth from the alternative. Alvin Goldman (1976: 771, 774) writes,

... a cognitive mechanism must enable a person to *discriminate* or *differentiate* between incompatible states of affairs. It must operate in such a way that incompatible states of the world would generate different cognitive responses... A person knows that p, I suggest, only if the actual state of affairs in which p is true is *distinguishable* or *discriminable* by him from a relevant possible state of affairs in which p is false. If there is a relevant possible state of affairs in which p is false and which is indistinguishable by him from the actual state of affairs, then he fails to know that p. [Emphasis in original.]

In order to know, Linda must possess some evidence that differentiates the truth from relevant alternatives, such as the bird's being a wren. Perhaps, for instance, she can tell the bird is larger than a wren, or that its beak is too thick. If she lacks such evidence, she is unable to eliminate the relevant error possibility and lacks knowledge.

Claim Two, recall, holds that bare statistical evidence that p, at least of the magnitude exemplified by Prisoner One, is not knowledge-conducive. The Relevant Alternatives Condition on knowledge bolsters this claim. Lottie's belief that her ticket did not win the lottery is very likely true, given the statistical evidence adduced. But the possibility that her ticket won is a relevant alternative. The "it could be you" structure of a lottery—that winning could so easily happen and would be so significant—renders the possibility salient. It cannot be properly ignored.²⁰ But Lottie lacks evidence that discriminates her true belief from this relevant error possibility. This suggests Lottie fails to know her ticket did not win. Lottie's reasoning from bare statistical evidence is not knowledge-conducive.

¹⁹ The disguised robot possibility might be relevant in some abnormal contexts, such as a lifelike robot convention.

²⁰ Lewis (1996: 557).

In Prisoner One the factfinder likewise lacks the ability to discriminate p (Ryan is guilty) from relevant alternatives (Ryan refused to riot). These options are indistinguishable given the evidence available. This contrasts with the kind of evidence adduced in Prisoner Two, where eyewitness testimony differentiates Ryan from the non-participating prisoners. The eyewitness evidence might not be infallible—the witness might be mistaken or dishonest—but it is the kind of evidence that can address relevant alternatives. Unlike the bare statistical evidence in Prisoner One, eyewitness evidence can, in principle, differentiate the truth from relevant alternatives. Reflecting on the Relevant Alternatives Condition suggests that, since he cannot discriminate the truth from relevant error possibilities, the Prisoner One factfinder lacks knowledge.

This insight illuminates *Smith v. Rapid Transit*. (Recall *Smith v. Rapid Transit* does not involve any statistical evidence and so differs significantly from statistical evidence examples like Prisoner One.) Smith's evidence renders it very likely that the bus was operated by Rapid Transit. But her evidence fails to address the relevant alternative: Her evidence does not speak to the possibility of a privately owned or chartered bus. If, as the Relevant Alternatives Condition holds, Smith knows Rapid Transit is responsible only if Smith can eliminate relevant error possibilities, then Smith lacks knowledge. It might be unlikely that the bus was privately owned, but Smith's evidence says nothing that differentiates her contention from this possibility.

Thus the knowledge-centred explanation for the inadequacy of bare statistical evidence for affirmative legal verdicts is promising. The explanation holds that factfinders cannot rule against the person unless they know the person is culpable. And merely statistical evidence, at least of the magnitude in Prisoner One, is not knowledge-conducive.

Indeed, Claim Two suggests a further knowledge-based explanation of the inadequacy of merely statistical evidence for affirmative legal verdicts.²¹ If merely statistical evidence is not knowledge-conducive, and the court knows it adjudicates with merely statistical evidence, then the court convicts Ryan despite knowing it lacks knowledge. It seems particularly bad for a nation to punish citizens while knowing it lacks knowledge of culpability. In some unfortunate cases the court may, through unnoticed deficiency, lack knowledge. Perhaps a trusted witness was convincingly lying, for instance, or a crucial DNA test was faulty. But in such cases the court relies on knowledge-conducive kinds of evidence that went awry in the particular case, and does not know it lacks knowledge. If a court relies on bare statistical evidence, by contrast, the court is aware that its evidence is not knowledge-conducive.

But the knowledge-centred account has weaknesses. Recall the two claims:

Claim One. Knowledge of culpability is required for appropriate affirmative legal verdicts.

Claim Two. Bare statistical evidence that p , at least of the magnitude exemplified by Prisoner One, does not lead to knowledge that p .

Above I argued that Lottie's belief based on bare statistical evidence could easily be wrong. Even if her belief is true, it is a nearby possibility that her belief is false. And I argued that bare statistical evidence that p cannot rule out relevant error possibilities. These considerations suggest that Claim

²¹ Blome-Tillman (2017); Littlejohn (2017).

Two is correct: bare statistical evidence that p is inadequate for knowledge that p . But let us revisit Claim One. Is knowledge required for affirmative verdicts?

4. Objections to the knowledge-centred account: “Verdict set aside.”

In what follows I sketch four weaknesses of Claim One. Firstly, if criminal convictions require knowledge of the defendant’s guilt, why don’t theorists say this? Legal practice, legal scholarship, and philosophical scholarship feature longstanding intense debate about the “beyond reasonable doubt” standard.²² There are debates about what the standard is, whether jurors understand it, and whether and how it should be explained to jurors. If the standard of proof governing criminal conviction is knowledge, these debates are mysterious. There are at least two mysteries. Firstly, if knowledge governs criminal proceedings, why does the legal system appeal to the standard “beyond reasonable doubt” at all, rather than simply invoking knowledge? Secondly, as described above, knowledge is a common, familiar idea, a central notion in everyday thought and talk, and is paramount in epistemology. Indeed, epistemology is typically glossed as “theory of knowledge”. Given this familiarity, if “beyond reasonable doubt” should be glossed simply as “knowledge”, why don’t more theorists and practitioners perceive this connection?

A second problem is that the knowledge-centred explanation of the inadequacy of bare statistical evidence for legal judgement does not readily extend to less demanding standards. Legal systems employ a variety of standards, including “preponderance of evidence”, which governs civil and family courts, and the “clear and convincing evidence” standard, which governs equity cases such as right-to-die hearings, wills, libel, child custody, paternity disputes, and commitment to mental institutions.²³ Plausibly knowledge of culpability is not required for these lower standards. And so further explanation is required for the inadequacy of bare statistical evidence for satisfying these less demanding standards.²⁴

The third and fourth problems claim that beyond reasonable doubt is less demanding than knowledge and that it is more demanding. Firstly, beyond reasonable doubt is less demanding than knowledge. Knowledge is factive: If p is false, S does not know p . But plausibly a compelling case for a person’s guilt can satisfy the legal threshold of beyond reasonable doubt even if the person is innocent, and so false convictions can nonetheless be procedurally correct. “Beyond reasonable doubt that p ”, in other words, plausibly is not factive; it does not entail p . This threatens Claim One: Knowledge is not required for legal verdicts.

Advocates of the knowledge-centred explanation of the inadequacy of bare statistical evidence for legal verdicts can respond in two ways. Firstly, they could aver that beyond reasonable doubt is not satisfied unless the claim is true. This would be a revisionary position.²⁵ Alternatively, they could

²² Gardiner (2019) surveys these debates.

²³ United States v. Fatico, 458 F Supp. 388 (E.D.N.Y. 1978); Sand and Rose (2003). Legal standards in the US—including prison and police proceedings—include probable cause, reasonable suspicion, clearly erroneous, substantial evidence, reasonable indications, reason to believe, some credible evidence, substantial evidence, and even “some evidence”.

²⁴ Blome-Tillman (2017) and Moss (2018b) discuss knowledge-centred approaches to interpreting lower standards.

²⁵ Although see Duff et al. (2007: 69); Moss (2018b: 224); Ho (2008: 116; 122). One might hold that “beyond reasonable doubt that p ” is not factive, but argue “ S proved that p ” is factive, and so “*proof* beyond reasonable doubt” is factive. But this approach is less intuitive for lower standards: It is implausible that “ S proved p to a preponderance of the evidence” is factive.

maintain that, even though beyond reasonable doubt is not factive and knowledge is factive, beyond reasonable doubt can nonetheless be understood by reference to knowledge. Beyond reasonable doubt requires all the other conditions of knowledge, but does not require truth. Adherents might thereby advance a weaker variant of Claim One:

Claim One_{WEAKER}. Knowledge-conducive evidence of culpability is required for appropriate affirmative legal verdicts.

Adherents to this strategy would identify the epistemic properties of knowledge-conducive evidence. Perhaps knowledge requires evidence that is conclusive, eliminates relevant error possibilities, is sensitive, safe, ensures reliability, and so on. We need not worry here about the details of these epistemic conditions. All that matters for the purposes of this chapter is that these conditions are variously posited as necessary conditions on knowledge-conducive evidence. On this approach, whichever evidential features are required for knowledge are thereby required by the beyond reasonable doubt standard.

One weakness of this approach is that once we are evaluating these evidential features directly, and discussing whether they are required for beyond reasonable doubt, one might wonder whether knowledge itself has dropped out of the picture: Perhaps beyond reasonable doubt requires conclusive evidence, evidence which eliminates error possibilities, sensitive evidence, reliable evidence, and so on, regardless of whether these epistemic properties are required for knowledge, and regardless of whether beyond reasonable doubt should be understood by reference to the evidential conditions of knowledge. We can investigate the epistemic properties of beyond reasonable doubt directly, without considering whether the properties are necessary for knowledge and whether knowledge is necessary for beyond reasonable doubt. This objection to the knowledge-centred approach is bolstered by the fourth objection.

The fourth objection to the knowledge-centred approach is that beyond reasonable doubt seems more demanding than knowledge.²⁶ Knowledge is common. We can know things from simple testimony. We can even possess knowledge in some topics, such as whether human activity affects climate change, despite widespread disagreement. Knowledge requires good reasons. Perhaps knowledge requires ruling out relevant error possibilities. But plausibly mere knowledge does not require ruling out *all reasonable* error possibilities. This is too demanding for mere knowledge. We can gain knowledge from testimony, for example, even if it is not a wholly unreasonable possibility that the speaker is lying; we can normally simply disregard that possibility.

It makes sense that beyond reasonable doubt is more demanding than mere knowledge. Beyond reasonable doubt governs an unusually severe and serious domain. Life and liberty are at stake. Knowledge, by contrast, governs relatively mundane affairs. A surgeon knows her neighbour visited Tenerife in 2015 and her son has history class on Tuesdays. She might well possess sufficient evidence to know these claims without much investigation; evidence need not be outstanding in order to be knowledge-conducive. Knowledge is ubiquitous. But, the thought goes, the operating surgeon needs

²⁶ Perhaps the “clear and convincing evidence” standard, which is weaker than beyond reasonable doubt, better matches the epistemic threshold for knowledge. Cf. Gardiner (ms-c).

outstanding evidence—more than mere knowledge-conducive evidence—about which kidney to remove. For severe matters, more than knowledge is required. The surgeon must be wholly certain.²⁷

If beyond reasonable doubt is more demanding than knowledge, this does not itself directly threaten Claim One. Claim One articulates a necessary condition for beyond reasonable doubt, not a sufficient condition. Perhaps beyond reasonable doubt is knowledge plus other conditions, such as ruling out additional error possibilities, considering all adducible evidence, or being utterly sure. Adherents to the knowledge-centred explanation of the inadequacy of merely statistical evidence argue knowledge (or, given objection three, knowledge-conducive evidence) is necessary for warranted legal verdicts; and this condition—combined with statistical evidence not being knowledge-conducive—explains why Prisoner One’s verdict is unwarranted.

But if knowledge itself is neither sufficient nor necessary for beyond reasonable doubt, this further attenuates any relationship between knowledge and legal proof, which chips away at the knowledge-centred explanation.

And we might plumb further and ask why knowledge-conducive evidence is necessary for beyond reasonable doubt. Answers to this question might invoke features of knowledge-conducive evidence that have legal value. A guilty verdict should not have significant, nearby risk of being false, because a state should not convict if false conviction is a nearby possibility. Plausibly therein lies the legal value of knowledge-conducive evidence since—as argued in section 3ii—if the factfinder employs such evidence, he could not easily be wrong. Or if a state convicts Ryan it should have something to differentiate his guilt from innocence; legal justice demands that evidence addresses the relevant alternative that Ryan did not riot. Knowledge-conducive evidence insures such relevant alternatives are addressed. Thus, once we plumb we may well find support for Claim One flows from particular epistemic features—immunity from easy error and ruling out relevant alternatives—that are desirable in legal verdicts.

And recall that we appealed to these very same particular epistemic features to motivate Claim Two. In light of the four objections articulated in section four, which cleave knowledge from legal verdicts, this suggests a more direct approach: Excise knowledge from the explanation, and appeal directly to the fulcrum epistemic features themselves.

In section three we examined a knowledge-centred explanation of the inadequacy of bare statistical evidence for legal verdicts. This strategy appeals to particular epistemic features to argue that knowledge-conducive evidence (or knowledge) is necessary for beyond reasonable doubt. It argues those fulcrum epistemic features are legally desirable and are properties of knowledge. The strategy then appeals to those very same fulcrum features again to explain why bare statistical evidence is not knowledge-conducive. It argues bare statistical evidence cannot secure those particular epistemic features, and those features are necessary for knowledge. One could instead more directly argue the

²⁷ For discussion see Brown (2008: 1144–1145); Reed (2010: 232); Lackey (2010). Those who maintain knowledge is sufficient for proof beyond reasonable doubt must explain away the intuition that beyond reasonable doubt is more demanding. They might argue that knowledge and beyond reasonable doubt have equal epistemic criteria, but beyond reasonable doubt, embedded in legal settings, requires additional procedural conditions to obtain. Perhaps both require possessing evidence that eliminates all reasonable error possibilities, for example, but beyond reasonable doubt also requires subjects to consider this evidence explicitly. This approach, if plausible, can retain the claim that knowledge and beyond reasonable doubt are on par, epistemically, and diagnose the sense that the latter is epistemically more demanding by conceding that it is procedurally more demanding.

fulcrum epistemic features themselves are necessary conditions on affirmative legal verdicts, and those features cannot be secured by bare statistical evidence. Knowledge would then drop out of the picture.²⁸

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