**Reconstructing Reasonable Doubt**

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1. **Introduction**

We offer two insights as to what is required for belief in guilt to be ‘beyond reasonable doubt’ (BARD).

Insight 1: BARD requires a *safe* belief in guilt that was *appropriately caused*.

Insight 2: BARD requires judgment that all possible *reasonable* epistemic starting points, lead to guilt.

These two insights share a higher-order perspective on the evidence.

We stake a middle ground between views that reconstruct BARD in strictly mathematical terms as threshold probabilities of guilt and views that see BARD as not quantifiable. Our view is that even if there is a threshold requirement, that at best is a *necessary*, not a *sufficient*, condition for BARD.

While a verdict of guilt requires belief in guilt (with high probability), this alone is insufficient for BARD. Our account fills in what is missing.

1. **Insight 1: Safe and Appropriately Caused Belief in Guilt**

Ruling out relevant alternatives as unreasonable requires attention to higher-order evidence about the belief-formation process that the trier-of-fact used to arrive at a conclusion of guilt.

The criterion to be satisfied is:

**(SBG) The belief state in guilt[[1]](#footnote-1) suffices for conviction only when:**

**(a) the trier-of-fact’s belief in guilt is safe; and**

**(b) it was caused by appropriate cognitive processes (abduction, computation, deduction, memory, perception, etc.)**

The trier-of-fact judges whether (SBG) is satisfied by examining not only evidence but higher order evidence concerning the evidence adduced at trial. He examines whether:

(c) he could have been easily wrong in similar situations (Williamson (2000: 147)); and

(d) whether his belief in guilt is founded upon flawed or otherwise unreasonable cognitive processes.

If he answers negatively to both (c) and (d), then (SBG) provides that he’s free of reasonable doubt and he may — or even should — convict the accused; his mental state has met the threshold, whatever it is. (SBG) itself has pride of place in the inquiry; questions (c) and (d) are offered to epistemically determine whether (SBG) is satisfied in a given case; it is likely the query a trier-of-fact makes of himself, but (c) and (d) are not what constitutively explain whether BARD-guilt is present. Appellate review of a trier-of-fact’s judgment that RD is present in some case is via inquiring as to whether or not (SBG) was actually satisfied.

In a case like *Gatecrasher*, (SBG) is not satisfied. We stipulate that 104-1 people at a show crashed the gate, with 104 in attendance, such that 104-1 committed a crime; exactly one ticket was sold and subsequently collected. But if that’s all that’s known, then the trier-of-fact’s belief that a given party – any one of the 104 – put on trial for crashing the gate is guilty is fragile, since it could have easily been wrong in similar circumstances; one of the 104 is not guilty. Thus, even a very high credence like 99.99% is not a sufficient condition for BARD-guilt.

1. **Insight 2: Ruling Out Alternative Starting Points as Unreasonable**

Where a factfinder ends up after hearing the evidence is a function of where she began. Two factfinders with different assumptions - and starting points - at the outset could reach different conclusions about guilt; two factfinders might even disagree whether the very same evidence weighs for or against an hypothesis.

This divergence can be entirely rational, as long as each responds to new evidence consistently.

This can be seen clearly in the orthodox Bayesian framework: each fact-finder begins with a prior subjective probability, from which she updates her beliefs via a rule of conditionalization. So long as her credence obeys Kolmogorov’s Axioms[[2]](#footnote-2), she is rational[[3]](#footnote-3).

The view we are developing is that BARD goes beyond high belief in guilt, which is a function of where you began. What about other starting points?

Except for cases of deductive certainty, there will *always* be a set of priors, starting from which, and conditional upon evidence adduced at trial, doubt[[4]](#footnote-4) would be warranted. In other words, for any evidence, there is a prior probability function that is coherent (consistent with the Kolmogorov Axioms) such that, conditional on the evidence, pr(guilt) will be low. This would mean that you could never convict anybody, since there will always have been at least one other rational possible starting point that would have led to doubt.

We need a view that distinguishes between *rational doubt* and *reasonable doubt*. BARD requires that the fact-finder judges the (rationally possible) alternative conclusion (that pr(guilt) is low) not merely as false but as *unreasonable*. In developing this model we are inspired by an account of conditionalization like Lange (1999)[[5]](#footnote-5).

Accordingly, the BARD test traces back to all possible starting points (priors) and asks: ***of all the possible starting points that lead to doubt, is there at least one that is reasonable*?**

Some alternative priors are relevant (‘reasonable’) alternatives, whereas others are judged as crazy, as ‘unreasonable’. If possible doubt emanates from the former, it is reasonable, if it only results from the latter, it is not.

1. **Conclusion**

We take it as plain that a probability threshold for BARD-guilt is at most a necessary, not a sufficient, condition for conviction. One could discover what it is and still not know whether to acquit or convict in a trial. By contrast, our two insights fill in what is missing.

On both insights we require the fact finder to step outside of his own perspective and take a higher order view on his belief in guilt.

Insight 1 requires higher order evidence that he would not have easily held a false belief in similar circumstances and that his belief was not caused by a flawed cognitive process.

Insight 2 requires a trier of fact stepping back from his actual starting point and asking: of the other starting points that are reasonable, would adopting one of them and conditionalizing thereon have led to a different conclusion?

**Postscript**

1. Guilt beyond a reasonable doubt (BARD) has generated much criticism, especially that BARD does not lend itself easily to mathematical precision; it is notoriously difficult to specify the probability threshold, if any, that constitutes BARD-proof.

* “The idea of reasonable doubt is not susceptible to quantification; it is inherently qualitative (*Massachusetts v. Sullivan*, 482 N.E.2d 1198 (1985))
* “The idea of reasonable doubt is inherently qualitative. Any attempt to quantify it may impermissibly lower the prosecution’s burden of proof, and is likely to confuse rather than clarify” (*McCulloch v. State*, 99 Nev. 72, at 75 (1983))
* “The word “probability” brings to mind terms such as “chance,” “possibility,” “likelihood” and “plausibility” – none of which appear [sic] to suggest the high level of certainty which is required to be convinced of a defendant’s guilt “beyond a reasonable doubt”” (Blackmun and Souter, JJ. dissenting, *Victor v. Nebraska* (1994))

2. *Response*: these cases are reactionary. Our best concepts of doubt and evidence are cashed out in terms of probability.

This is readily seen in the evidentiary standard for ordinary civil cases: liability on a finding of preponderance of the evidence, which is met just when the probability of liability exceeds 50%.

3. *No Reduction to thresholds.* A reduction of BARD-guilt to a particular threshold probability will not suffice. Why not?

Pr(guilt)=1 – certainty – would trivially be too high a threshold; it will (almost) never be met in actuality.

However, pr(guilt) < 1 > 50% faces other difficulties.

* One of these is that the arbitrariness of any of these individual thresholds: miniscule differences determine whether BARD-guilt exists, e.g., if 96.25% is the threshold, why not 96.24999%.
* Second, these minute differences are not discernible by triers-of-fact.
* The third sort of reason is evident from a lottery case, where pr(guilt) < 1 may be arbitrarily high but reasonable doubt in guilt still exists, e.g., Buchak (2014) contrasted the following two cases:

Case 1. Blue Bus. A is hit by a blue bus. Blue Bus Company (BBC) owns 80% of the blue buses in town, and Red Bus Company (RBC) owns 20%. On this evidence, pr(guiltBBC) = 0.8.

Case 2. Yellow Bus. Yellow Bus Company (YBC) and Green Bus Company (GBC) each own 50% of the green buses. B is hit by a green bus. C testifies that the bus bore GBC’s logo. C’s vision is imperfect, she is correct 75% of the time. On this evidence, pr(guiltGBC) = 0.75.

We see from this that while pr(guiltBBC) > pr(guiltGBC), there is a sense in which judging Blue should be convicted is more doubtful than judging that Green ought to be convicted. The law, in fact, reaches the same conclusion regarding ‘naked statistical evidence’. The evidential conclusion is not merely a function of the probability of a party’s guilt.

4. Decision-Theoretic Thresholds. One way to defend a threshold view of reasonable doubt is (following Laudan 2006) to construct it decision-theoretically: BARD is ill-defined without stating what goal we are after. Once we know the goal sought to be attained, i.e. once we have a function with an evaluation of the utility of Type 1 and Type 2 errors [false convictions and false acquittals], we can determine the probability needed to satisfy that goal.

For reasons that Laudan’s critique of BARD concedes, the law does not conform to this sort of goal-relative notion of reasonable doubt. For instance, the standard of proof is invariant across crimes; we require the same standard in a recidivist murderer’s trial as we do for someone accused of a first-time misdemeanor. So, if not merely a threshold probability, and not a decision theoretic notion, then how should we characterize BARD?

5. Cashing out BARD. Our view is that it is essential to characterize what *makes* a doubt reasonable. Other commentators have focused on the quantity bulk doubt as characterizing its reasonableness; in other words, it is reasonable to doubt if the degree of doubt is sufficiently high.

Two ways of understanding the threshold views (that we think amount to the same thing in practice) are:

1. What is reasonable *doubt?* In other words, how much \*doubt\* would it be reasonable to have, where doubt is cashed out pr(~guilt)
2. What is *reasonable* doubt? In other words how much doubt do I need to reasonably hesitate to convict. Again, where doubt is cashed at as pr(~guilt).

Our view, on the other hand, reconstructs BARD-proof such that it admits of the desired mathematical precision, but we do not explicate BARD-proof as mere shorthand for some sufficient threshold probability (or credence).

In other words, we think that what makes a doubt reasonable is qualitative (the doubt, whatever its quantity has or lacks this property). *We take no view as to whether BARD requires a threshold probability: regardless, that threshold would, at best, be a necessary not a sufficient condition* for BARD. We aim to fill in the details as to what those sufficient conditions are.

So, perhaps:

1. What is *reasonable doubt*? In other words, could it have been *reasonable* to still *doubt* (whatever that is) given the evidence (where a case where the fact-finder himself *doubts* is a special case).

This account can work both with and without a minimal threshold for ‘doubt’.

Our two insights are offered to cash this out.

1. We intend for this account to be neutral between full belief accounts and probabilistic accounts. We also are neutral as to whether, on probabilistic accounts, a threshold of some sort greater than 0.5 is appropriate. Regardless, any threshold will be, at best, a necessary but not a sufficient condition for BARD. If such a threshold assumed, read (SBG) as a condition on when a probability greater than threshold (itself insufficient for guilt) becomes sufficient to convict. [↑](#footnote-ref-1)
2. Kolmogorov’s Axioms for Probability are:

That probabilities are *non-negative* P(X) ≥ 0

That probabilities are no larger than one P(Ω) = 1

That probabilities are *additive*: P(X or Y) = P(X) + P(Y) if X and Y cannot both occur

So, for example, if the probability of rain is 0.6, the probability of no rain must be 1-0.6=0.4. [↑](#footnote-ref-2)
3. Additionally, orthodox Bayesians require updating via conditionalization: if you learn that A, adjust your probability in B to your prior probability in B conditional on A (P(B|A)). This requirement is more controversial than the first. [↑](#footnote-ref-3)
4. Again, this will be true regardless of how ‘doubt’ itself is cashed out (whether via a threshold or otherwise). Any level of doubt can be reached by some rational starting point. [↑](#footnote-ref-4)
5. Lange (1999) views the requirements of Bayesianism as steps in a justifactory argument from a set of reasonable priors to an argued for conclusion, rather than as a description of how an agent must update her views given some past credal state. Lange shows how an agent can step outside of her particular priors and ask if and how a belief state that would have been reasonable at time t1 could have rationally evolved, given the evidence, into a different credal state at t2, regardless of whether the agent possessed that credal state at t1. What matters is the calibration of credal states across time, relative to the available evidence at that time. On this view, as opposed to Orthodox Bayesianism, an agent can recognize at some later time that her earlier credal state was unreasonable and adjust it. [↑](#footnote-ref-5)