

# LEGAL PROBABILISM

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NOTES ON PARDO & ALLEN'S 'JURIDICAL PROOF AND BEST EXPLANATION' (2007) AND ALLEN'S 'THE NATURE OF JURIDICAL PROOF' (2017)

## INFERENCE TO THE BEST EXPLANATION (IBE)

1. The paper 'Juridical Proof and Best Explanation' starts with an account of inference to the best explanation. This is an inference that is non-demonstrative (or non-deductive). Inference to the best explanation is not a form of enumerative induction either. Rather, it is an abductive inference that comprises two stages:

“(A) generating potential explanations of the evidence and then (B) selecting the best explanation from the list of potential ones as an actual explanation or as the truth. Practical considerations and interests affect both steps. ” (p. 229)

2. What is to be explained (the *explanandum*) is the evidence. Think of it as the facts that serve as the starting point of the inference, for example, that fingerprints matching the defendant's were found at the crime scene, or that screaming was heard in the apartment next door. On the other hand, hypotheses, theories, accounts or narratives—or, more generally, possible explanations—constitute what explains (the *explanans*) the facts.
3. Both tasks, generating potential explanations and selecting the best, are comparative.

First, what is to be explained is not simply 'the evidence', but rather, why the evidence is this way rather than this other way, for example, why screaming was heard in the apartment next door as opposed to ordinary noise.

“Explanations do not explain evidence in its entirety; explanations explain aspects of evidence. Explanations rarely explain why A; they explain why A rather than B. The inferential interests at stake pick out the appropriate contrasts (or “foils”)—whether we want to explain why A rather than B or why A rather than C” (p. 232)

Second, the explanation to be selected is the best compared to the other possible explanation under consideration: it is comparatively the best explanation.

4. Different criteria help to determine whether an explanation is better than another:

“An explanation is, others things being equal, better to the extent that it is consistent, simpler, explains more and different types of facts (consilience), better accords with background beliefs (coherence), is less ad hoc, and so on; and is worse to extent it betrays these criteria. There is no formula for combining such criteria; ...each criterion is a standard which must be weighed against the others.’ (p. 230)

5. Note there is a circularity here, though not necessarily a bad one:

“Explanations are “self-evidencing” in the sense that what is explained (the evidence) provides a reason for believing that the explanation is correct. The circularity is that a hypothesis explains the evidence while the evidence helps to justify the hypothesis.” (p. 233)

## INFERENCE TO THE BEST EXPLANATION IN JURIDICAL PROOF

6. Pardo & Allen argue that inference to the best explanation helps to understand how juridical proof works, better than probability theory does. To see how, consider again the two stages of inference to the best explanation: generating possible explanations and selecting the best.
7. Let's start with generating explanations. The parties at trial, say defense and prosecution in a criminal trial, will offer competing explanations of the evidence. The defense will offer 'innocence explanations' while the prosecution will offer 'guilt explanations'. Specifically:

"Parties with the burdens of proof on claims or defenses offer versions of events that include the formal elements that make up the particular claims or defenses; parties on the other side offer versions of events that fail to include one or more of the formal elements. In addition, parties may, when the law allows, offer alternative versions of events to explain the evidence." (p. 234)

The fact-finders—judges or jurors—may themselves come up with their own explanations of the evidence, besides those offered by the parties.

8. In fact, there is an infinite number of explanations, at varying levels of specificity. It is impossible to consider them all. Two constraints act on the generation of potential explanations:

"two factors set the inferential interests and the appropriate level of detail at which fact finders should focus in evaluating explanations. These factors are the substantive law and the points of contrast between the versions of events offered by the parties (the disputed facts)." (p. 236)

9. Next, selecting the best explanation. It's instructive to distinguish civil and criminal cases:

"In civil cases where the burden of persuasion is a preponderance of the evidence, proof depends on whether the best explanation of the evidence favors the plaintiff or the defendant. Fact finders decide based on the relative plausibility of the versions of events [=explanations] put forth by the parties, and possibly additional ones constructed by themselves or fellow jurors." (p. 234-235)

"In criminal cases, rather than inferring the best explanation from the potential ones, fact-finders infer (and should infer) the defendant's innocence whenever there is a sufficiently plausible explanation of the evidence consistent with innocence (and ought to convict when there is no plausible explanation consistent with innocence assuming there is a plausible explanation consistent with guilt)." (p. 238-239)

10. The phrase 'sufficiently plausible' is vague, but perhaps necessarily so:

"[T]here is vagueness in how 'sufficiently plausible' an explanation must be in order to satisfy ... the beyond-a-reasonable-doubt ... standard, but this vagueness inheres in the standards themselves. Lack of precision may thus be a critique of the standards, ... not a critique of an explanation-based account." (p. 240)

When an explanation consistent with innocence is sufficiently plausible, there exists a reasonable doubt about guilt. Thus, jurors should acquit.

## OBJECTIONS TO THE EXPLANATION-BASED THEORY OF JURIDICAL PROOF (AND REPLIES)

11. Let's now look at some objections from the standpoint of legal probabilism.
12. The first objection challenges the comparative process of selecting the best explanation (p. 250-251). In a negligence case involving a car accident, the plaintiff argues that the light was red while the defendant argues it was green. If the light was red, the defendant was negligent, and otherwise—that is, green or yellow—the defendant was not negligent. Suppose the jury finds that  $P(\text{red}) = .42$ ,  $P(\text{green}) = .3$  and  $P(\text{yellow}) = .28$ . Who should prevail?

**Legal probabilism** If the burden of proof is met when  $P(\text{negligence}) > .5$ , the plaintiff failed to meet the burden of proof since  $P(\text{red}) < .5$ . So decide for the defendant.

**Best explanation** If *green* is the best explanation and *green* implies *negligence*, the plaintiff met the burden of proof. So decide against defendant.

The objection: deciding against the defendant seems incorrect in the hypothetical case above.

Allen and Pardo respond that the “aggregate explanation”  $\text{green} \vee \text{yellow}$  is more plausible than the competing explanation *red*. If so, the plaintiff should lose as expected. The explanation-based theory does not require one to focus on maximally specific explanations:

“Based on the substantive law in the street-light example, it’s perfectly appropriate for the jury to contrast the explanation ‘The light was red’ against the explanation ‘The light was green or yellow.’” (p. 252)

13. A second objection to the explanation-based account has to do with how individual pieces of quantitative evidence—say DNA matches—should be evaluated. This is a micro-level objection. Since they can quantify evidence, probability-based models offer greater precision:

“[R]ecent attempts have been made to model the probative value of particular items of evidence in supporting particular factual conclusion. They work by employing likelihood ratios and Bayes’s Theorem to attempt to fix numerically the value of evidence. Such models have been used to model the value of evidence as diverse as “random match” DNA samples, infidelity, and carpet fibers. If successful, these models present clear advantages over, and objections to, explanation-based approaches. The formal probability models appear to provide more precision, which would thus make them particularly useful in deciding issues like the admissibility of evidence and whether evidence is sufficient to meet a standard of persuasion.” (p. 257-258)

14. Allen and Pardo respond that explanatory considerations, not quantitative considerations, must take priority in assessing the value of the evidence:

“[P]robability models have it backwards, for these models do not capture the objective value of legal evidence. Instead, they err to the extent they deviate from the results generated by explanatory criteria and are useful to the extent they respect and supplement those results.” (p. 258)

## OBJECTIONS TO LEGAL PROBABILISM

15. As they respond to objections, Pardo & Allen level their own objections to legal probabilism.
16. The first objection is that legal probabilism fails to appreciate the comparative nature of legal proof. Legal probabilism assumes that all possible explanations are before the court and they add up to a 100% probability (p. 256). But this assumption misunderstands juridical proof:

“[T]he standard problem of trials is not to accumulate all the stories for the parties and see which collectively adds up to greater than .5. Rather, the standard problem may be something more like the probability of the plaintiff’s case being .4, and the respective probabilities of the two defenses each being .1. In such a case, the Bayesian approach would result in a defense verdict (plaintiff has not satisfied its burden of persuasion), yet that is perverse from the point of view of reducing errors. By contrast, an explanatory account avoids this perverse result by focusing on the relative plausibility of the ... explanations” (p. 256)

17. A second objection to the probability-based account emerges more clearly in Allen’s 2017 paper “The Nature of Juridical Proof: Probability as a Tool in Plausible Reasoning”. This objection has to do with empirical verification:

“If fact-finders in real trials were instructed in the use of Bayes’ Theorem, they would fill in the formula with radically subjective components, such as the prior probability of a proposition to be updated and the various probabilities needed for the operation of the theorem. No means exist to test or validate these values in the typical juridical case; thus, any possible result is achievable through the use of Bayes’ Theorem at trial. Analogously, comparing the results of such trials to others conducted traditionally gives one no purchase on which procedure produces the best results. These points in turn mean that no testable consequences can be derived from the proposition that the use of Bayes’ Theorem would produce better results at trial. It can never be confirmed or denied.” (p. 6)

18. A third objection challenges the assumption in legal probabilism that a probability space of events can be carved out even before the trial evidence is taken into account:

“[I]n no system does the fact-finder have substantial knowledge about the case until evidence is presented. Obviously. That means, though, that it is literally impossible to form a probability space of mutually exclusive hypotheses, to assign them initial probabilities, or to recognise all logical truths in the probability domain.” (p. 6)