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Recommended Citation

Corea-Levy, Yali. "Making Sense Of Reasonable Doubt: Understanding Certainty, Doubt, And Rule-Based Bias Filtering." *American University Criminal Law Brief* 8, no. 1 (2012): 48-62.

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Making Sense Of Reasonable Doubt: Understanding Certainty, Doubt, And Rule-Based Bias Filtering

YALI COREA-LEVY¹

I. INTRODUCTION: AN UNDELIVERED PROMISE

The Winship doctrine requires more than simply a trial ritual. A doctrine establishing so fundamental a substantive constitutional standard must also require that the factfinder will rationally apply that standard to the facts in evidence.

~Justice Potter Stewart.²

Jurors are essentially asked to answer two questions when deliberating the fate of an accused in a criminal trial: (1) Do you think the defendant is guilty?; (2) If so, how certain are you of their guilt—namely, are you certain beyond a reasonable doubt?³

This article explores the feeling of certainty which jurors rely on when making a determination of guilt beyond a reasonable doubt in criminal prosecutions. The descriptive portion of this article is composed of three factual claims: (1) jurors are left to rely on their feelings of certainty in reaching verdicts, instead of coming to conclusions based on a well defined rule or set of instructions because reasonable doubt is not well defined; (2) the feeling of certainty alone is an unreliable method for determining the strength or weakness of the case presented; and (3) the fickle nature of reasonable doubt is further exacerbated by the fecund existence of biases.

The prescriptive portion of this article, crudely stated, is to use a jury instruction that requires the jury to create a paradigmatic example of reasonable doubt before the facts of the case have been presented. The jury would subsequently be instructed by the judge to reference the example and compare it to the specific facts presented. The purpose of this two-step process is to create a standard *before* biases have the ability to surreptitiously affect the standard. Moreover, jurors will have a standard

against which the feeling of certainty can be checked. The empirical research supporting this prescription will be explored throughout this article.

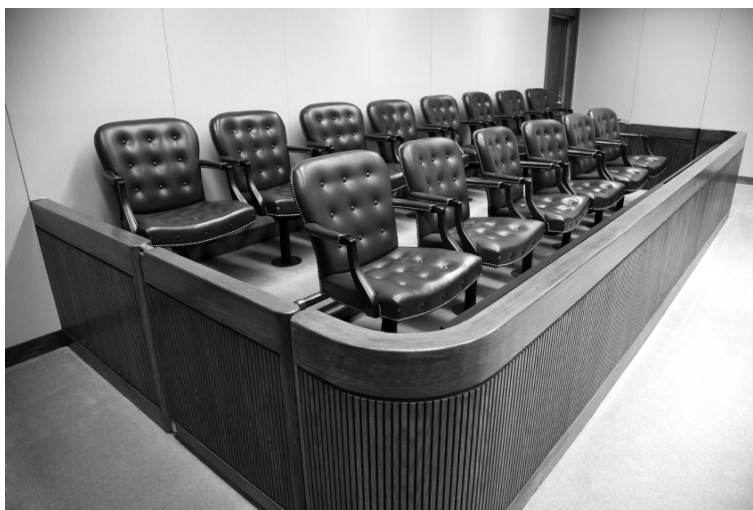
Section II provides a brief history of reasonable doubt to illustrate its place and purpose in the criminal justice system. Section III provides insight, through a linguistic analysis, into the reasons that reasonable doubt is so hard to define, thus, providing some of the tools necessary to solve the problem. Section IV reviews research in the cognitive sciences that demonstrates that the feeling of knowing is a poor indicator of guilt or innocence.

Section V examines concrete biases found in jury trials and the pervasive nature of biases in general. By implementing findings in the cognitive and social sciences, the section demonstrates how biases about which we may be unaware nonetheless affect the decisions we make, including coming to conclusions of guilt and innocence in criminal trials.⁴

Section VI sets forth the first step toward the prescriptive solution. It demonstrates how applying rule-based reasoning can help filter out biases. Coupled with Section VII, which

further elaborates on the implementation of the jury instruction, these two sections constitute the prescriptive claim. Finally, Section VIII addresses a concern that may remain. Specifically, it addresses work by Gregory Mitchell that suggests people may automatically correct biases without ever having the need to consciously correct

them. This article argues that the malleability of the reasonable doubt concept creates fertile ground for conviction decisions based on implicit biases that should play no role in the decision making process.



II. A REASONABLE HISTORY

I find it rather unsettling that we are using a formulation that we believe will become less clear the more we explain it.

~Jon Newman, Chief Judge of the
United States Court of Appeals for the Second Circuit⁵

It is not hyperbole to say that life, liberty, and justice are on the line in criminal cases. The risk of a false conviction or an erroneous release of a criminal back into society rests on the tenuous concept of “proof beyond a reasonable doubt”—a concept so fragile that some courts have opined that any attempt to define it could only lead to, at best, no clarification of the concept and, at worst, further “confusion.”⁶

Yet, belief beyond a reasonable doubt has been a barometer of justice in criminal cases since at least the mid-nineteenth century.⁷ Reasonable doubt was put forth as a means of getting a jury to meet a “moral certainty.”⁸ In turn, moral certainty was seen as the highest possible degree of certainty attainable when mathematical certainty was not possible.⁹ Thus, moral certainty was the highest possible certainty attainable through inductive inquiries, in contrast to mathematical certainty which was the certainty attainable through strictly deductive reasoning (i.e. formal logic and mathematics).¹⁰ For example, we can be mathematically certain that five minus four equals one, but only morally certain that the earth revolves around the sun.¹¹ As Professor Steve Sheppard has phrased it: “For a writer in 1800 to claim, ‘I am morally certain,’ roughly equates to my saying two centuries later, ‘I am as certain as I can be, based on what I have seen and heard.’”¹²

Regardless of whether the concept of moral certainty clarifies that of reasonable doubt, beginning in the nineteenth century the two concepts were viewed as wedded to—if not synonymous with—one another.¹³ This is important for understanding the weight that reasonable doubt was meant to carry. Reasonable doubt was supposed to mean the highest possible level of inductive certainty.

Interestingly, the use of “reasonable doubt” may in fact have been introduced to help the prosecution, not to prevent wrongful convictions.¹⁴ Reasonable doubt was seen as more favorable to prosecutors than other permissible instructions such as the following given by John Adams: “Where you are doubtful never act; that is, if you doubt the prisoner’s guilt, never declare him guilty; this is always the rule, especially in cases of life.”¹⁵ In short, “a reasonable doubt” allowed more room for error than “any doubt.”¹⁶

Despite the reasonable doubt standard’s protracted usage, the Supreme Court did not establish it as an explicit constitutional standard until 1970 in the case of *In re Winship*.¹⁷ In *Winship*, the Court held that the Due Process Clauses of the Fifth and Fourteenth Amendments allow for criminal convictions only

where “proof beyond a reasonable doubt of every fact necessary to constitute the crime with which [one] is charged” has been established.¹⁸ The Court reasoned that this heightened standard of proof was necessary in criminal cases because “[t]he accused during a criminal prosecution has at stake interest of immense importance, both because of the possibility that he may lose his liberty upon conviction and because of the certainty that he would be stigmatized by the conviction.”¹⁹

The opinion in *Winship* further supports the historical weight of the standard by asserting the importance “in our free society that every individual going about his ordinary affairs have confidence that his government cannot adjudge him guilty of a criminal offense without convincing a proper fact finder of his guilt with the *utmost certainty*.”²⁰ In a concurring opinion, Justice Harlan reasoned that a standard higher than a “preponderance of the evidence” was needed because of “a fundamental value determination of our society that it is far worse to convict an innocent man than to let a guilty man go free.”²¹ However, the *Winship* Court provided no guidance with respect to a definition, leaving the language used to convey the concept of “reasonable doubt” in the hands of the lower courts.²²

Twenty-four years after *Winship*, the Court was given the opportunity to clarify the reasonable doubt concept in *Victor v. Nebraska*.²³ Unfortunately, the Court did not take advantage of that opportunity. The opinion begins with Justice O’Connor acknowledging that “[a]lthough [reasonable doubt] is an ancient and honored aspect of our criminal justice system, it defies easy explication.”²⁴ The opinion further asserts that the Constitution neither prohibits trial courts from defining reasonable doubt nor requires a definition from trial courts.²⁵ “Indeed, so long as the court instructs the jury on the necessity that the defendant’s guilt be proved beyond a reasonable doubt, the Constitution does not require that any particular form of words be used in advising the jury of the government’s burden of proof.”²⁶

The closest thing to a standard found in the opinion is that “[t]he Constitutional question . . . is whether there is a reasonable likelihood that the jury understood the instructions to allow conviction based on proof insufficient to meet the *Winship* standard.”²⁷ Thus, lower courts have a tremendous amount of latitude when it comes to articulating reasonable doubt to jurors.²⁸

Due to the latitude given to lower courts when implementing reasonable doubt, court instructions have ranged broadly.²⁹ For example, some state and federal courts have concluded that instructions need not be given unless the jury requests an instruction.³⁰ Other courts require instructions in all cases.³¹ Yet other courts prevent the term from being defined even when jurors who express confusion with the meaning of the concept explicitly request an instruction.³² According to these courts, defining reasonable doubt actually makes the concept less clear to jurors.³³ Given that experts in the field are unable to reach a consensus on the definition, it is not surprising that

empirical evidence shows that jurors, often tasked with making the decisions regarding the fate of the accused, do not understand the concept, and often misapply it.³⁴

The history of reasonable doubt thus reveals a concept of great importance that has nonetheless been vaguely articulated. It is with this significance and vagueness in mind that this article advocates for a need to better “define” reasonable doubt.³⁵ The subsequent section will elucidate the reasons behind reasonable doubt’s vagueness.

III. THE GOOD, THE BAD AND THE REASONABLE: VAGUE WORDS GALORE

It is difficult, if not impossible, to so define [the term reasonable doubt] as to satisfy a subtle and metaphysical mind, bent on the detection of some point, however attenuated, upon which to hang a criticism.

~Supreme Court of Virginia³⁶

One of the primary challenges in attempting to standardize reasonable doubt and to subsequently create a rule for applying it is the term’s inherent vagueness.³⁷ As a first step in devising a definition for reasonable doubt, this section explains why the problem arises.

It is no secret that the word “reasonable” is vague. Legal scholars tend to treat vagueness with great trepidation, if not outright disdain.³⁸ Yet, logicians and philosophers since at least Eubulides have recognized that vagueness is fecund.³⁹ Take a leg off of a chair—is it still a chair? How many pieces of a car can one remove before it ceases to be a car? Almost any object can be turned into a “vagueness problem.” Despite being surrounded by vagueness, we seem able to refer to things with general success. This is partly due to the surrounding context. Although “a heap of sand” is vague, if a construction worker has seen the hole that the sand is meant to fill, vagueness ceases to be a practical challenge to fulfilling the request.⁴⁰ It is through this context that we come to “know” what is meant by the word “heap.”

Part of the confusion comes from the fact that English, unlike some other languages, lacks an important linguistic distinction. Namely, to “know” can mean either “knowledge by acquaintance” or “knowledge by description.”⁴¹ In the “heap” example, the construction worker knew what “heap” meant through acquaintance, that is, she saw the specifications that “heap” had to satisfy. In this sense, “heap” is self-explanatory. However, attempting to define “heap” with words is a Sisyphean task, leaving even the best definition wanting for more.

Understanding this distinction helps shed light on Justice Stewart’s famous line in *Jacobellis v. Ohio*, “I know it when I see it.”⁴² Stewart intuitively realized that defining pornography was not an easy task, in part because it required knowledge by

acquaintance—one cannot fully understand the meaning of pornography through words alone.⁴³ It is doubtful that Stewart was explicitly aware of the semantic distinction between the two types of knowledge. He realized he knew what pornography was, yet was still unable to develop an articulable definition.⁴⁴

Similarly, “reasonable doubt” may seem deceptively easy to understand, yet elusive when one tries to articulate with a traditional definition. This is because it is a concept that is much better understood through acquaintance than by description, much like “pornography.”

In Section VII, the “definition” of reasonable doubt through a jury instruction requiring jurors to come up with paradigmatic examples will be explained. This section underscores the importance of such an unconventional jury instruction.

IV. KNOWING! WE KNOW. OR, ON BEING CERTAIN

*Despite how certainty feels, it is neither a conscious choice nor even a thought process. Certainty and similar states of “knowing what we know” arise out of involuntary brain mechanisms that, like love or anger, function independently of reason.*⁴⁵

~Robert A. Burton, Neuroscientist

Reasonable doubt is deeply interrelated with the feeling of certainty.⁴⁶ Thus, one would hope—and it often seems taken for granted—that the feeling of certainty arises as a result of well-founded reasoning. This section demonstrates the folly of this assumption.

A. CERTAINTY AND ACCURACY: UNFAITHFUL LOVERS

Certainty is important to our analysis of reasonable doubt because the *feeling* of certainty is what gives reasonable doubt its seal of approval, and thus, is the putative executioner of justice in criminal trials.⁴⁷ If the criminal justice system has implemented reasonable doubt solely for the sake of ensuring a good night’s sleep to those deciding the fate of the accused, then there is little need for further analysis. However, if we are interested in truly achieving justice, an important question arises: How well does the feeling of certainty correlate with accuracy? Stated another way, how often is the feeling of being correct, actually correct? This is a key question tackled by the “overconfidence” literature.⁴⁸ The literature on overconfidence has produced hundreds of articles examining how and why people tend to feel more certain about facts than they ought to.⁴⁹ Thus, the literature can be an important source of information with regard to the relationship between the feeling of certainty and accuracy.

The term of art used to describe an individual’s feeling of certainty in relation to their success rate is “calibration.”⁵⁰ A person is well calibrated if her feeling of certainty directly

correlates to the accuracy of her predictions.⁵¹ To use a concrete example from the literature, if in the course of four days it rains three times, then a weatherperson who predicted a 75% chance of rain on each of those four days is well calibrated, while a person who predicted a 90% chance of rain is poorly calibrated.⁵²

The research has found that at times of high confidence, people tend to be poorly calibrated.⁵³ In one study, subjects were given a quiz with 180 questions, broken up into ten 18-question quizzes.⁵⁴ The quiz questions were varied and the subject matter included science, movies, history, sports, geography, and music.⁵⁵ The subjects were incentivized with cash for accurately predicting how well they would do.⁵⁶ On average, when the subjects felt 90.5% certain, they were only correct 73.1% of the time.⁵⁷ Of note, this 16.6% disparity between certainty and accuracy is on the conservative end. Previous studies found instances in which those who felt 90% certain their answers were correct, correlated as low as 30% to 50% with accuracy.⁵⁸ However, the author notes that the higher rate is consistent with other research, because participants in this study had access to some information regarding correlation between predictions and success after different quizzes.⁵⁹ Thus, the participants had information that could help them become better calibrated.

Earlier studies also showed that when people made judgments with extreme confidence there was a poor correlation with accuracy.⁶⁰ For example, in the classic paper *Knowing with Certainty: The Appropriateness of Extreme Confidence*, researchers found that when subjects indicated they believed the odds of being correct were 90.91% (10:1),⁶¹ subjects were only correct 75% (3:1) of the time.⁶² Even when expressing extremely high odds, such as a-million-to-one, subjects were wrong almost 7% of the time.⁶³

The calibration studies demonstrate that overconfidence occurs frequently and is not merely a “statistical artifact.”⁶⁴ Thus, the onus would seem to be on those who think jurors are well calibrated. That is, when the jurors believe themselves to be 99% certain of guilt, what makes the trial environment less likely to produce a significant discrepancy with accuracy? The effect of overconfidence with specific regard to complex legal cases and its direct affect on reasonable doubt will be explored below.

B. CERTAINTY IN UNCERTAIN CIRCUMSTANCES: COHERENCE THEORY

There is a further empirical reason to believe that the feeling of certainty is poorly calibrated to accuracy and thus, the reasonable doubt standard is weak. Since at least the mid-1980s, cognitive scientists have found that our brains prefer our beliefs to be certain as apposed to ambiguous.⁶⁵ Specifically, when people are presented with complex and ambiguous problems, once the person feels the evidence is in favor of one side—no matter how slight—there is a strong corresponding feeling of

certainty. More recently, Dan Simon, a law professor whose research focuses on the intersection between law and psychology, has run empirical studies that have found coherence-based reasoning occurring in subjects who were given ambiguous criminal case hypothetical situations and asked to evaluate how sure they were of their conclusion (either guilty or innocent).⁶⁶ In Simon’s own words, “[c]oherence-based reasoning posits that the mind shuns cognitively complex and difficult decision tasks by reconstructing them into easy ones, yielding strong, confident conclusions.”⁶⁷ Thus, if jurors initially feel the evidence is ambiguous, but eventually lean slightly towards guilt, “the evidence is bolstered from overall ambiguity to a belief beyond a reasonable doubt.”⁶⁸ Therefore, what was meant to be the highest standard of proof possible in our legal system, has been demoted to what, at best, is no stronger than a preponderance of the evidence.

Recounting the most relevant experiments from Simon’s article will provide a better understanding of this neurological phenomenon. First, the experimenters had the subjects take a pre-test.⁶⁹ The pre-test required subjects—all of whom were jury eligible—to view seven apparently unrelated vignettes.⁷⁰ At the end of each vignette, the subjects were asked to assess the strength of certain inferences related to the vignette.⁷¹ For instance, “a vignette that concerned an eyewitness identification of a person was followed by a factual question about the likelihood that the identification was correct.”⁷²

Once the pre-test was finished, the subjects were asked to act as jurors in a case requiring suspect identification.⁷³ The case had seven pieces of unrelated circumstantial evidence. Four pieces were inculpatory and three were exculpatory.⁷⁴ The evidence was designed to be “sufficiently multifarious and balanced so as to create a complex case.”⁷⁵ Furthermore, the seven pieces of evidence in the case were designed to be “virtually identical” to the seven pieces of evidence presented to the subjects in the first part of the experiment (unbeknownst to the subjects).⁷⁶

Subsequently, the subjects were presented with arguments from counsel on both sides pertaining to the inferences from the pieces of evidence.⁷⁷ The subjects were then asked to “render a verdict and rate their confidence in the decision.”⁷⁸ Finally, they were asked to determine the likelihood of a defendant’s guilt as supported by each piece of evidence.⁷⁹ Importantly, the questions were designed to be “essentially identical” to those in the pre-test.⁸⁰

Despite the pre-test evidence and the subsequent evidence being virtually identical, there was a significant shift in certainty.⁸¹ Namely, in the pre-test stage, the subjects who eventually decided on guilt seemed almost equally convinced by the strength of the inculpatory evidence as they did by the exculpatory evidence.⁸² This was consistent with the experiment’s design intent. Yet, at the point that subjects were asked to make

a decision on guilt or innocence, those who decided on guilt felt the inculpatory evidence was very strong, while the exculpatory evidence was very weak.⁸³ A similar effect was also found with subjects who found for innocence.⁸⁴

That is, while they found the evidence in the pre-test relatively even, by the time they had to make a decision they felt the exculpatory evidence was significantly stronger.

These findings were predicted and consistent with a previous experiment that used a similar design using tort law.⁸⁵ Similar to the aforementioned case, subjects in the pretest did not show particularly strong degrees of certainty, yet once they were required to make a decision in the second part of the test, “75 percent of participants indicated that they had maximal or next-to-maximal confidence in their verdicts; conversely, only 5 percent indicated low or next-to-low confidence.”⁸⁶

All these results bolster, and are predicted by, the theory behind coherence-based reasoning. That is, after spending time weighing ambiguous and relatively complex evidence, subjects tended to feel strong degrees of certainty despite their own initial impressions that the evidence did not clearly point in favor of one verdict or the other.

C. THE EXTENT OF THE PROBLEM

While the research in cognitive science shines an unflattering light on our feelings of certainty, it is important not to take these findings to extreme nihilistic conclusions. First, the overconfidence research still finds a correlation between the strength in the feeling of certainty and the accuracy of that certainty.⁸⁷ That is, the more certain one feels, the more likely one is to be correct. Yet, this still comes with the caveat that there is a dangerous disparity between the degree of certainty and the degree of accuracy—a disparity that may lead to pernicious effects in criminal trials.⁸⁸ Second, the coherence research deals with complex and ambiguous cases.⁸⁹ That is, in straightforward cases, the worries found in this research are much less applicable.⁹⁰ This is quite consistent with the overconfidence research that has found the polar opposite problem with straightforward questions.⁹¹ Specifically, there seems to be an underconfidence effect where people are presented with straightforward questions they should feel quite confident about.⁹²

Thus, while this research does not leave the criminal legal system in shambles, its findings are sufficiently robust and widespread that a legal system in search of equity must account

for them.⁹³ Additionally, the issue cannot be fully appreciated without addressing an issue that further compounds the problems presented in this section. Namely, a juror’s reasons for feeling certainty with regard to guilt may rest on unconscious biases, unbeknownst to the juror.⁹⁴ Therefore, the juror’s ultimate feeling of certainty may be premised on little more than a bias that nudged them in one direction, and due to human nature, produced a strong feeling of knowing where such a feeling was not warranted.⁹⁵

The extent of the problem can be summarized in two parts. First, in ambiguous criminal cases, cognitive science tells us that jurors will eventually feel strongly towards one side, even if they initially felt the evidence did not clearly indicate guilt or innocence.⁹⁶ This is the aforementioned problem. Second, unbeknownst to jurors, their reasons for feeling that one side may possess more credibility could rest on unconscious biases.⁹⁷

Thus, their ultimate feeling of certainty may be premised on little more than a bias that nudged them in one direction, and due to human nature, produced a strong feeling of knowing.

The following section will look at the second part of the problem: unconscious biases.

Thus, while this research does not leave the criminal legal system in shambles, its findings are sufficiently robust and widespread that a legal system in search of equity must account for them.

V. HOW BIASES WE CANNOT SEE AFFECT CONSCIOUS DECISION MAKING

[M]ost of our behavior is governed by a cauldron of motives and emotions of which we are barely conscious. Your conscious life, in short, is nothing but an elaborate post-hoc rationalization of things you really do for other reasons.

~V.S. Ramachandran, Neuroscientist⁹⁸

This section examines how our decisions can be affected by superfluous facts. These irrational yet influential factors all fall into the category “biases” in this article. The full impact of these biases can only be appreciated in light of the preceding section. In particular, while these factors may seem to only slightly tilt the scales of decision-making, these slight alterations may eventually lead to feelings of certainty as illustrated above. The psychological biases literature is expansive. Recently, its importance has been realized and incorporated in disciplines from economics to philosophy and law.⁹⁹ The theme that has attracted such disparate disciplines is the fascinating implications they

have for human reasoning.¹⁰⁰ The work in human reasoning has even led to a Nobel Prize in economics for one of its pioneers.¹⁰¹ Given the vastness of the literature, it would make little sense to bombard the reader with dozens of studies. Instead, it will be helpful to examine some pertinent and representational studies.

A. BIASES IN RAPE CASES

Rape is one of the most heinous crimes one human being can commit against another. The victim is tormented long after the perpetration of the crime.¹⁰² The severity of the crime therefore makes it all the more disturbing to know that unconscious biases can play a significant role in the final verdict.¹⁰³

In one study cited by Jon Hanson and David Yosifon, researchers found that jury-eligible subjects were significantly less likely to find that a woman had been raped if the woman was viewed as “more respectable.”¹⁰⁴ Specifically, the subjects found it more likely that a divorced woman had been raped than a virgin or married woman.¹⁰⁵ This seemingly unintuitive finding is actually compatible with a body of research known as “just world theory.”¹⁰⁶ In brief, the just world theory postulates that as people, we tend to find explanations that are compatible with the view that the world is just. Thus, subjects are more willing to believe that a divorcee has been raped because it is more compatible with a just world than a married woman or virgin being raped—due to the latter two being perceived as more virtuous.¹⁰⁷

Another bias that seeps into rape cases is the beauty bias.¹⁰⁸ This bias is the favoring of individuals who are deemed physically attractive over those who are considered physically unattractive.¹⁰⁹ Although more intuitive, it is equally disturbing. In rape trials this plays out in the form of a jury more readily believing an “ugly” man raped a “beautiful” woman than would be the case if the man were deemed “handsome” and the woman “ugly.”¹¹⁰ Thus, less attractive women are at a greater risk of having their rapist found innocent and less attractive men are at a higher risk of being found erroneously guilty.¹¹¹

B. RACE-BASED BIASES

Implicit racial biases are most likely to come to mind when people hear the word “bias.” The Implicit Association Test (IAT), conducted out of Harvard University, is a research methodology that studies race bias, amongst other biases, and has become popular with legal scholars.¹¹² One race-based IAT that has been administered requires people to quickly associate “Black names” with positive words, and “White names” with negative words.¹¹³ Next, the task requires the opposite, quickly matching Black faces to negative words and White faces to positive words.¹¹⁴ The program has found statistically significant time differences.¹¹⁵ More explicitly, people tend to more quickly attribute positive words to White names and more quickly attribute negative words to Black names.¹¹⁶

However, even if this test is actually able to pick out implicit biases, what we really care about as a society are measurable pernicious effects of these biases.¹¹⁷ Thus, the following is a sample of some of the pernicious effects of unconscious biases. In their paper, *Fair Measures*, researchers Jerry Kang and Mahzarin Banaji examine an experiment where the outcome was readily explainable by IAT results.¹¹⁸ The researchers randomly assigned two hundred and ninety-one medical interns “to view, read symptom profiles, and make diagnosis and treatment recommendations for a hypothetical Black or White patient.”¹¹⁹

Consistent with the population of the United States, a significantly higher number of Black patients were diagnosed with coronary artery disease (CAD) than White patients.¹²⁰ Thus, an equitable distribution would require that a higher number of Blacks receive the state-of-the-art treatment than Whites, in order to stay proportional. Disturbingly however, in proportion to the respective population of Black patients, significantly fewer of these patients were prescribed the state-of-the-art treatment than White patients.¹²¹ Furthermore, “[t]he most highly biased medical interns, as measured by the IAT, were also more likely to treat White patients with [the state-of-the-art treatment], despite their own diagnoses of Black Americans’ higher likelihood of” CAD.¹²²

It is important to note that the medical interns were aware that their evaluations were being scrutinized, and they therefore had a strong incentive to at least appear unbiased, even if they realized they harbored racist feelings.¹²³ Thus, these biases are likely something the interns were completely unaware of, yet could have a profound effect on people’s lives.

It would be surprising if biases found in highly educated professionals under scrutiny would somehow disappear when jury eligible citizens stepped in a courtroom—especially given that the guardian of equity (the reasonable doubt standard) is woefully lacking in its current iteration. Fortunately, there is little need for major inferences, since a recent article by Justin D. Levinson, Huajian Cai, and Danielle Young has specifically tested whether race plays a role in jury decision-making with respect to guilt.¹²⁴

Amongst other tasks, sixty-seven jury eligible students took an IAT that measured the correlation between Black and guilty.¹²⁵ The IAT results “suggest that participants held an implicit association between Black and Guilty.”¹²⁶ However, this alone would not be sufficiently interesting without reasons to believe that such implicit biases would lead to pernicious consequences. To test this, researchers designed vignettes with either a White defendant or a Black defendant.¹²⁷ These vignettes included several pieces of evidence, which were identical in both iterations of the vignette.¹²⁸ The participants were asked to indicate how pertinent certain evidence was towards an assessment of guilt.¹²⁹ The study found that “having stronger implicit

associations between Black and Guilty...predicted judgments of ambiguous evidence as more indicative of guilt.”¹³⁰ Finally, the implicit nature of these biases is underscored by a surprising finding. Namely, researchers found that “implicit attitudes of race and guilt are quite different than attitudes of race revealed by using explicit measures—in fact, one explicit measure even showed opposite results—participants who felt warmer towards African Americans actually showed more bias on the Guilty/Not Guilty IAT.”¹³¹

C. MISCELLANEOUS BIASES

It may be tempting to focus on specific biases and attempt to counteract them. Such counteraction could range from calls for greater governmental regulation to try and counterweigh the unconscious influences consciously¹³² to jury nullification.¹³³ Even assuming that these counter measures have equitable consequences, the problem of identifying all the biases that exist would be a daunting, if not impossible, task. This is because the psychological biases literature makes it clear that biases are fecund,¹³⁴ as will be illustrated below.

Due to our heightened awareness of race and sex biases, studies concerning biases have tended to focus on these two areas. By their very nature, however, unconscious biases are difficult to ascertain outside of formal studies.¹³⁵ Furthermore, devising a study presupposes that the researcher believes the study will yield interesting results.¹³⁶ Thus, only the factors which researchers assume may be susceptible to biases will be studied. To get a sense of how pervasive and surprising some of the biases can be, it may help to take a glimpse outside of the narrow scope of jury trials.

For example, in one study discussed in the classic paper *Telling More Than We Can Know: Verbal Reports on Mental Processes*,¹³⁷ researchers Amos Tversky and Daniel Kahneman found that the order in which products were placed in a consumer survey created a bias.¹³⁸ Researchers spread identical dresses in one study, and nylons in another so that they were in a row.¹³⁹ Subjects were then asked to pick the “best quality” product.¹⁴⁰ Subjects were found—particularly in the nylon study—to heavily over-choose from the right side.¹⁴¹

This outcome occurred despite the fact that all the products were identical. Nisbett and Wilson noted that, “[w]hen asked about the reasons for their choices, no subject ever mentioned spontaneously the position of the article in the array.”¹⁴² Subjects denied being influenced by the position of the article even when specifically asked, “usually with a worried glance at the interviewer suggesting that they felt either that they had misunderstood the question or were dealing with a madman.”¹⁴³ The paper recounted dozens of experiments, all of them tied by the theme of people who were consistently unaware as to why they chose what they had chosen, or felt the way they had felt.¹⁴⁴ This was particularly surprising because researchers

often suggested to the subjects that a certain feature, such as order, could have had an effect; yet they denied being aware of the order at anytime.¹⁴⁵ Another example comes from a study conducted by Kenneth Mathews and Lance Canon.¹⁴⁶ The researchers found that when ambient noise levels were normal (approximately 50db), people were almost five times as likely to help an apparently injured individual than when ambient noise was loud (approximately 87db).¹⁴⁷ As one researcher has noted, “[t]hese experiments are not aberrational, but representative.”¹⁴⁸

D. REASONABLE DOUBT COUPLED WITH IMPLICIT BIASES

The only assurance of equity, and only barrier against implicit biases, is the fact that reasonable doubt is uniformly implemented. Due to its malleability, however, the reasonable doubt standard tends to be little more than a façade.¹⁴⁹ Furthermore, it is also highly unlikely that the disparities we see in such studies are due to jurors not caring. Studies show that jurors really do try and apply the standards, but genuinely have trouble understanding jury instructions—if provided to them at all.¹⁵⁰ The eventual prescription compels jurors to essentially create their own definition of reasonable doubt by imagining what types of evidence would amount to beyond a reasonable doubt.¹⁵¹ This mental exercise is done *before* the facts of the case are known, thus preventing the biases from creeping into the reasonable doubt analyses.

Again, the extent of the problem can be summarized in two parts. First, in ambiguous criminal cases cognitive science tells us that jurors will eventually feel strongly towards one side, even if they initially felt the evidence did not clearly indicate guilt or innocence.¹⁵² This was the problem articulated in Section IV. Second, unbeknownst to jurors, their reasons for favoring one side may possess more credulity based on unconscious biases—the problem articulated in this section.¹⁵³ Thus, their ultimate feeling of certainty may be premised on little more than a bias that nudged them in one direction, and due to human nature, produced a strong feeling of knowing.

VI. SETTING STANDARDS THROUGH “RULE-BASED BIAS FILTERING”

This section demonstrates how utilizing rule-based reasoning can help minimize the extent to which biases play a role in our reasoning. In conjunction with Section VII—which explains both how reasonable doubt can be defined and used as a rule—this section constitutes the prescriptive claim.

The biases that lead us to convict some individuals when there is little evidence against them and exonerate others when there is a plethora of evidence against them can incite various reactions. Some may see the radical cost of revamping the legal system as too high, and thus downplay the extent to which these

biases undermine the very foundations of this legal system.¹⁵⁴ Others may call for counter and compensatory measures such as jury nullification in cases where biases are likely to occur in favor of the prosecution.¹⁵⁵ Fortunately, by standardizing the reasonable doubt concept, many of the biases can be ameliorated, without having to choose between doing nothing, and possible over-compensation.¹⁵⁶

This idea can be illustrated using one of the aforementioned biases. For example, if we were to introduce a rule for lending aid to people, it could help us eliminate the bizarre environmental noise bias found in the Mathews and Canon study.¹⁵⁷ An aid-lending rule could be formulated as follows: “When someone needs help, always assist unless doing so would make you late to an important engagement or otherwise harm you.” The merits of the rule are not of importance. What is important is that by having a rule and following it, the rule may override the biases.¹⁵⁸ Thus, a subject who applies this rule may still walk by someone who needs help while ambient noise is heightened and feel no inclination to help. However, having the rule in mind gives them a reason to override the lower level bias.¹⁵⁹ The feeling is the same, but now our subject has an anchor by which they may effectively filter out the irrelevant “noise”—both figuratively and literally.

Note that this solution does not require the individual to be aware of the bias. In fact, there could be biases related to aid rendering that are produced by what we had for breakfast, the laundry detergent we use, or the color of our underwear. An individual may be aware that they are not inclined to help the person in distress, but they need not know *why* in order to successfully apply the rule. What is needed is a contextual cue that triggers the explicit aid-lending rule and that the prospective aider follows the rule. In this case, the cue is noticing an individual in distress. In a jury trial, the cue is an explicit jury instruction.

Importantly, there is an inverse correlation between the precision of the rule and the flexibility of the rule. There is also a positive correlation between the flexibility of a rule and the amount of biases that can seep in. For example, suppose if instead of the aforementioned assistance rule, we replaced it with: “Help someone anytime you feel like it.” Such a vague rule makes a person just as susceptible to bias influence as a person with no rule. Imagine creating a rule meant to protect one from wily

sales persons, well-versed in cognitive biases. A rule lacking flexibility might be stated as: “Under no circumstance will you spend more than \$200.” As long as one sticks to the rule, a person can feel secure that they will not spend more than they had planned on. Compare that to a rule that states: “Spend no more than seems reasonable.” While this rule has much greater flexibility, it comes at the cost of doing very little to protect against biases.

The problem carries over to the reasonable doubt concept. The more narrowly one defines reasonable doubt, the less the standard is susceptible to biases; but it may also become less flexible.¹⁶⁰ So how can reasonable doubt keep a degree of flexibility while having the rigidity necessary for rule-based bias filtering to work? The following section provides an answer.

VII. USING KNOWLEDGE BY ACQUAINTANCE TO STANDARDIZE REASONABLE DOUBT

This section explains how knowledge by acquaintance can be used to define reasonable doubt and serve as a rule through which rule-based bias filtering may occur.¹⁶¹ Furthermore, the section ends by dispelling a possible concern arising out of the literature.

From the lack of a clear definition, it is apparent that reasonable doubt cannot be simply defined using words. As one author has observed, “[a]ttempts to define reasonable doubt simply establish ‘analytic connections between words and words[.]’ that belie the concept’s inherent quality of vagueness.”¹⁶² Instead of words, a jury instruction requiring jurors to come up with concrete examples that serve as definitions should be used. These examples act as definitions and rules, thus allowing rule-based bias filtering to occur. Jurors still have the ultimate deciding power with regard to whether the criteria are met, but instead of just relying on the unreliable feeling of certainty, they can rely on an illustrative definition.¹⁶³

Thinking of cases where we would all find a suspect guilty beyond a reasonable doubt is not difficult. For

example, a suspect is caught on a clear video recorder committing a crime, DNA evidence is found at the scene implicating the suspect, the suspect had a motive, and there was no evidence that undermined those facts. We can also think of cases in which

Instead of words, a jury instruction requiring jurors to come up with concrete examples that serve as definitions should be used. These examples act as definitions and rules, thus allowing rule-based bias filtering to occur.

we definitely would not feel comfortable finding someone guilty beyond reasonable doubt. For example, a case where no plausible motive is given and the only evidence is a witness who saw the individual in the area shortly after the crime was committed. Yet, when jurors are asked to come to a decision of guilt or innocence they rely on their unreliable feelings.¹⁶⁴

The examples are meant to use the juror exemplars as anchors to create positive guidelines. Much like it is better before one steps into a store to think about what she is willing to pay for an item, it is much better to think about what counts as reasonable doubt before the trial begins.

These anchors achieve at least three things. One, jurors create a standard that can be turned into a rule like the rules that were explored earlier, thus helping to filter out biases. Specifically, jurors can be instructed that they should not find guilt beyond a reasonable doubt, “unless the evidence presented is comparable to that of your reasonable doubt exemplar.” Two, by creating the rule before the facts of the trial are known by the jury, it is less likely that unconscious biases will weigh into its formulation.¹⁶⁵ Finally, the flexibility of the standard is kept. Jurors create their own exemplars, thus the worries about stripping the jurors of their ability to use personal beliefs is gone.¹⁶⁶

The idea of conscious thoughts (rules in the present case) acting to essentially veto lower level thoughts is one supported by neuroscientific research.¹⁶⁷ The neurophysiologist Benjamin Libet’s research putatively demonstrated that our conscious “will” to act occurs only *after* the neural commands for triggering that act have occurred.¹⁶⁸ Yet, he conceded that his research supported the idea that higher order (conscious) thoughts could act as a veto mechanism even once the lower order neural commands have been triggered.¹⁶⁹ Bolstering this position, the neurologist John Burton concurs with the aforementioned opinion adding, “[i]f you see conscious thoughts as being subsequent inputs into the hidden layer, you can see where a conscious decision can then be incorporated into unconscious decision-making.”¹⁷⁰

There is also research at the higher order cognitive levels showing that mental models work.¹⁷¹ One study found that while “[d]irect approaches, like informing participants of the existence of the bias and imploring them to “try harder” or to “be unbiased” have been generally unsuccessful, some success has been obtained with techniques that induce participants to actively create mental models in which they imagine alternative conclusions by urging them to consider the correctness of the opposite conclusion and to note the weaknesses of their preferred conclusion.”¹⁷² The exemplars would work as alternative conclusions where needed, that is, where the case at hand deviates from the mental model. If a case does not deviate from the model, there is no need to imagine alternatives, because by comporting with the mental model, the reasonable doubt standard has been achieved.

Further support for this idea comes from an unlikely candidate, viz. Gregory Mitchell.¹⁷³ Mitchell, who criticizes much of the research in implicit biases used in the legal context, points out that part of what makes us uniquely human is our ability to correct inaccurate (or biased) thoughts through higher order thoughts.¹⁷⁴ In short, while humans may have unconscious biases, it is not always clear that the biases affect our decision making, because we are able to self correct with these “second thoughts.”¹⁷⁵

Mitchell’s criticism supports the prescriptive claim that conscious mental models can serve to override conscious biases.¹⁷⁶ The rules used in rule-based bias filtering are second thoughts that are used to correct potentially pernicious biases.¹⁷⁷ In Mitchell’s own words, use of “mechanical rules and decision aids...[make] it more likely that simple computational errors and inappropriate weighting of data points will be avoided.”¹⁷⁸ Thus, although Mitchell would generally be viewed as a critic of the bias literature in the law, his findings actually support this article’s prescriptive claim.

Although Mitchell’s research bolsters the prescriptive claim, his views may seem to undermine the descriptive claim.¹⁷⁹ Namely, Mitchell thinks people may automatically correct for biases without ever having the need to consciously correct for them.¹⁸⁰ He argues that cognitive biases are overstated because we can correct for such biases.¹⁸¹ Yet, he does not seem to provide any data that shows we are more likely than not to filter out biases. Furthermore, findings such as those in the work of Kang and Benaji¹⁸² evidence the fact that these biases may creep in even if we take conscious steps to counter them.¹⁸³

Additionally, while we may be well aware of sex and race biases, there may be many biases whose effects we do not fully comprehend or even know about (e.g. beauty bias, weight bias, tattoo bias).¹⁸⁴ Even for unconscious correction to occur under Mitchell’s model there must be some impetus—conscious or unconscious—that results in second thoughts that correct for such biases.¹⁸⁵ Assuming a strong impetus to correct for biases we are completely unaware of seems foolhardy. Thus, in addition to Mitchell’s arguments lending support to this article’s prescriptive claim, the arguments do little to undermine the descriptive claim.

Admittedly, there will always be borderline cases that are not only difficult to decide, but which open the door for biases our mental models may not foresee. Therefore, the goal is not to eliminate implicit biases, but to ameliorate them. Furthermore, this solution need not be the only solution. The hope is that it will help compliment other solutions such as graphical illustrations and instructions simplified with the help of psycholinguistics.¹⁸⁶

In particular, jurors should be reminded that those accused of crimes need not show any evidence supporting their innocence because they are presumed to be innocent. Also, it may help to frame reasonable doubt against the other standards such

as preponderance of the evidence. Both of these clarifications are easy to explain and are of the utmost importance because jurors are often found to not understand them.¹⁸⁷ With jury instructions that take these standards into account, jurors will have sufficient individual flexibility while still being able to avoid some of the pernicious effects caused by implicit biases. This solution is compatible with a reasonable doubt standard that changes based on the severity of a crime or sentencing (a cost-benefit model of reasonable doubt).¹⁸⁸ This could be achieved by giving the jury information while they are constructing their reasonable doubt exemplars, so as to influence these mental models. For example, “while thinking about what constitutes a reasonable doubt, one should keep in mind that the current case carries with it the possibility of death.”¹⁸⁹ Jurors would thus be free to take the penalty into consideration when constructing their reasonable doubt mental model.¹⁹⁰

VIII. CONCLUSION

The inherent vagueness of reasonable doubt leaves jurors with nothing more to rely on than their gut feelings of certainty.¹⁹¹ While these feelings of certainty may sometimes rest on well-founded reasons, research in cognitive science shows that such feelings are no guarantee of cogent reasoning or accuracy.¹⁹² Particularly in factually complex and ambiguous cases, juror’s feelings may be unconsciously swayed by biases. This problem is exacerbated by the fact that it is quite likely that laypersons and experts alike have several biases that have never been considered.¹⁹³ In such ambiguous cases, research also reveals that jurors are likely to experience strong feelings of certainty, not due to factual clarity, but instead due to the nature of the human cognitive architecture.¹⁹⁴

Fortunately, a standard can be created once it is realized that “reasonable doubt,” while not amenable to a customary definition, can become an explainable standard by providing jurors with examples. Specifically, jurors can be instructed to create concrete exemplars of proof beyond a reasonable doubt, through which they may evaluate their final conclusions. Cognitive science leads us to believe that such a strategy (rule-based bias filtering) will help jurors reassess conclusions that strongly diverge from the exemplars. This is significant because such divergence is indicative of the fact that the conclusions were by-products of biases.

Finally, rule-based bias filtering through exemplars is not mutually exclusive with other putative solutions to the problem. Despite the impressive benefits of rule-based bias filtering, it is essential to stay open to the fact that empirical research may lead to further solutions. At the very least, empirical research may help maximize the manner and timing in which reasonable doubt mental models are constructed.

¹ This article is an updated version of an article previously titled: Utilizing Rule Based Bias Filtering to Standardize Reasonable Doubt and Ameliorate Cognitive Biases. The article was a runner up in a national writing competition held by the University of Pennsylvania (2011 ACS National Student Writing Competition). I would like to thank professor David Ball of Santa Clara University for feedback and support, professor Larry Marshall of Stanford University for helpful conversation at the nascent stages of this article and professor David Yosifon of Santa Clara University for his feedback and the opportunity to write this article. Finally, but certainly not least, professors Uriah Kriegal and Shaun Nichols of the University of Arizona for sparking and nurturing my interest in cognitive science.

² *Jackson v. Virginia*, 443 U.S. 307, 316–17 (1979).

³ See generally Robert C. Power, *Reasonable and Other Doubts: The Problem of Jury Instruction*, 67 TENN. L. REV. 45, 47 (1999) (discussing the difficulty jurors have in applying the reasonable doubt standard to evidence presented in a criminal trial when determining an accused’s guilt).

⁴ The word “bias,” as used in this article, is a broadly construed normative evaluation about our reasoning. That is, we have a bias when we give data in our reasoning more or less weight than we ought to. For example, in evaluating someone’s running speed we should not give any weight to the person’s skin color. If skin color plays a role, either by bolstering or undermining the evaluation of speed, then skin color is said to be a bias. See *infra* Section V, How Biases We Cannot See Affect Conscious Decision Making.

⁵ Jon O. Newman, *Beyond “Reasonable Doubt,”* 68 N.Y.U. L. REV. 979, 984 (1993) (referring to certain courts’ unwillingness to define reasonable doubt for fear it will become less clear).

⁶ *United States v. Hall*, 854 F.2d 1036, 1037-38 (7th Cir. 1988) (citing *United States v. Lawson*, 505 F.2d 433, 443 (1974), *overruled by United States v. Hollinger*, 553 F.2d 535 (7th Cir. 1977)) (stating that “defining reasonable doubt is often more confusing than illuminating”); *United States v. Martin-Trigona*, 684 F.2d 485, 493-94 (7th Cir. 1982)).

⁷ Thomas Mulrine, Note and Comment, *Reasonable Doubt: How in the World is it Defined?*, 12 AM. U. J. INT’L L. & POL’Y 195, 198 (1997) (referencing a criminal case from 1880 in which the judge observed that attempts to define reasonable doubt made the standard no less confusing to jurors).

⁸ See, e.g., *Commonwealth v. Webster*, 59 Mass. 295, 320 (1850) (stating that proof beyond a reasonable doubt requires “the evidence [to] establish the truth of the fact to a reasonable and moral certainty”).

⁹ See Mulrine, *supra* note 6, at 202 (“[T]he jury must understand . . . that while it is not possible to attain absolute certainty in the empirical category, it is possible to achieve increased certainty through the introduction of better evidence.”).

¹⁰ See *id.*

¹¹ It may seem unintuitive to some that we are unable to be “mathematically” or deductively certain about the fact that the earth revolves around the sun. After all, there is a deductive component in coming to this knowledge—namely, the mathematics involved in the calculation. However, there are many inferences involved. For example, we must assume our instruments are accurate and the trajectory of the sun does not change based on our observations. Additionally, and perhaps most crucially, we must assume the observations we have made in the past and the nomological framework we rely on, continue to hold true—also known as “the problem of induction.” This example is purposely extreme, thus helping to illustrate how strong a moral certainty can be.

¹² Steve Sheppard, *The Metamorphoses of Reasonable Doubt: How Changes in the Burden of Proof Have Weakened the Presumption of Innocence*, 78 NOTRE DAME L. REV. 1165, 1183 (2003).

¹³ See *id.* at 1195–96 (discussing how moral certainty became equated with the absence of reasonable doubt and how this hybrid standard replaced the “any doubt” standard).

¹⁴ See *id.* at 1195 (“[I]t is also evident, if from nothing else than [defense attorney John] Adams’s preference for doubt and [prosecutor] Robert Paine’s preference for reasonable doubt in the Boston Massacre cases, that prosecutors sought to limit juror doubt to a reasonable doubt.”).

¹⁵ See *id.* at 1191 (arguing that “Chief Justice Hail had rightly described the traditional view of the juror’s duty in doubt[.]”).

¹⁶ See *id.* at 1191-92 (suggesting that prosecutors preferred the “reasonable doubt” standard because emerging rules, including the defendant’s ability to produce exculpatory evidence and the new right for jurors to be free from punishment for verdicts against the state, made it much more burdensome to prove guilt under the “any doubt” standard).

¹⁷ See *In re Winship*, 397 U.S. 358, 364 (1970) (“Lest there remain any doubt about the constitutional stature of the reasonable-doubt standard, we explicitly hold that the Due Process Clause protects the accused against conviction except upon proof beyond a reasonable doubt of every fact necessary to constitute the crime with which he is charged.”).

¹⁸ *Id.*

¹⁹ *Id.* at 363.

²⁰ *Id.* at 364 (emphasis added).

²¹ *Id.* at 372.

²² See *Winship*, 397 U.S. at 361 (addressing the long history and widespread acceptance of reasonable doubt in the United States, but providing no definition).

²³ See *Victor v. Nebraska*, 511 U.S. 1, 5 (1994) (considering the constitutionality of two respective attempts to define “reasonable doubt” in the jury instructions of two first-degree murder cases).

²⁴ *Id.*

²⁵ *Id.* (“The beyond a reasonable doubt standard is a requirement of due process, but the Constitution neither prohibits trial courts from defining reasonable doubt nor requires them to do so as a matter of course.”).

²⁶ *Id.*

²⁷ *Id.* at 6.

²⁸ *Id.* at 5 (noting language from the Court in *Victor*, 511 U.S. at 5 that claims state courts can define “reasonable doubt” in their own language, or refrain from defining it at all).

²⁹ See *infra* notes 29-31 (presenting cases that illustrate the wide range of views among federal and state courts regarding reasonable doubt jury instructions).

³⁰ See, e.g., *United States v. Adkins*, 937 F.2d 947, 950 (4th Cir. 1991) (“The only exception to our categorical disdain for [providing a “reasonable doubt”] definition is when the jury specifically requests it.”); cf. *Lansdowne v. State*, 412 A.2d 88, 92-93 (Md. 1980) (holding that in criminal cases the trial judge must provide an instruction properly articulating “reasonable doubt” if requested by the defendant).

³¹ See, e.g., *Smith v. United States*, 709 A.2d 78, 79 (D.C. 1998) (en banc) (reaffirming mandatory explanation of “reasonable doubt” due in part to an unwillingness to submit such an important principle to random interpretation); see also *State v. Holm*, 478 P.2d 284, 288 (Idaho 1970) (providing a precise definition of reasonable doubt “so that there is no question in the jurors’ minds with respect to the concept” will facilitate the likelihood of correct jury verdicts).

³² See, e.g., *Pannell v. State*, 640 P.2d 568, 570 (Okla. Crim. App. 1982) (“An attempt to define ‘reasonable doubt’ by a trial judge is reversible error. The phrase . . . is self explanatory [and] definitions do not clarify its meaning, but rather tend to confuse the jury and should not be given.”); see also *State v. Douglas*, 640 P.2d 1259, 1260 (Kan. 1982) (arguing that while it is not an error to define “reasonable doubt,” no definition is capable of clarifying the term and it is best left undefined).

³³ See *Pannell*, 640 P.2d at 570; *Douglas*, 640 P.2d at 1260.

³⁴ See Henry A. Diamond, *Reasonable Doubt: To Define, Or Not To Define*, 90 COLUM. L. REV. 1716, 1723 (1990) (citing a study that demonstrated, in part, that reasonable doubt was not obvious to a sample of 606

college students. Given that there is no requirement that jurors be college educated, the lack of clarity found in the study likely translates even more strongly to a randomly selected jury population).

³⁵ “Define” is in scare quotes because the elucidation of reasonable doubt requires examples, rather than words which are usually associated with a definition. See *infra* Section II, The Good, The Bad and The Reasonable: Vague Words Galore.

³⁶ *McCue v. Commonwealth*, 49 S.E. 623, 629 (Va. 1905).

³⁷ See generally Erik Lillquist, *Recasting Reasonable Doubt: Decision Theory and the Virtues of Variability*, 36 U.C. DAVIS L. REV. 85, 174-96 (2002) (discussing the pros and cons of the term’s inherent vagueness).

³⁸ *Id.*

³⁹ See generally Dominic Hyde, *Sorites Paradox*, STANFORD ENCYCLOPEDIA OF PHIL., <http://plato.stanford.edu/entries/sorites-paradox> (last updated Dec. 6, 2011) (crediting Eubulides with first proposing the “sorites paradox,” which essentially states that we are surrounded by vagueness because, for example, we know that one grain of sand does not make a heap, but we do not know how many grains do).

⁴⁰ Thanks to Shaughan Lavine at the University of Arizona who provided me with this example during a talk on vagueness.

⁴¹ BILL BRYSON, *THE MOTHER TONGUE: ENGLISH AND HOW IT GOT THAT WAY* 14 (William Morrow & Co. Inc., 1990) (discussing a historic perspective of the English language while pointing out that other languages do in fact make the “knowledge by acquaintance” and “knowledge by description” distinction using different terminology. “[O]ther languages have facilities we lack. Both French and German can distinguish between knowledge that results from recognition (respectively *connaître* and *kennen*) and knowledge that results from understanding (*savoir* and *wissen*).”). See BERTRAND RUSSELL, *THE PROBLEMS OF PHILOSOPHY* 46-48 (Oxford Univ. Press, 1997) (providing the source of these terms and their use in academic discourse).

⁴² *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring).

⁴³ An extreme case of knowledge by acquaintance is knowledge of colors. There is no way one can define red with words to a person who has only seen in grey scale. The best one could do is explain that red is a darker color than yellow, etc. Yet this would be woefully lacking. There are also ambiguous cases that can refer to both types of knowledge. Both a coach and a pitcher “know” how to throw a ball. But it is clear that the best pitchers do not always make the best pitching coaches and vice-versa. The coaches must be able to describe the action. However, the pitcher may have acquaintance knowledge she is unable to describe to anyone else.

⁴⁴ See *Jacobellis*, 378 U.S. at 197 (Stewart, J., concurring) (“I shall not today attempt further to define the kinds of material I understand to be embraced within [hardcore pornography]; and perhaps I could never succeed in intelligibly doing so.”).

⁴⁵ ROBERT A. BURTON, *ON BEING CERTAIN: BELIEVING YOU ARE RIGHT EVEN WHEN YOU’RE NOT*, at xi (St. Martin’s Press, 2008) [hereinafter *ON BEING CERTAIN*].

⁴⁶ See, e.g., *Webster*, 59 Mass. at 320 (charging that proof beyond a reasonable doubt is “a certainty that convinces and directs the understanding, and satisfies the reason and judgment, of those who are bound to act conscientiously upon it”).

⁴⁷ See *infra* note 67 (analyzing why jurors feel certain in their decisions when perhaps they should not).

⁴⁸ See, e.g., Don A. Moore & Paul J. Healy, *The Trouble with Overconfidence*, 115 PSYCHOL. REV. 502, 504 (2008) (hypothesizing that after performing a task, people are bad judges of their own performances and even worse judges of the performances of others).

⁴⁹ See generally *id.* at 502 (claiming that a search for “overconfidence” in the PsychINFO database produced 365 hits, including more than 260 empirical studies).

⁵⁰ See Gideon Keren, *On The Calibration of Probability Judgments: Some Critical Comments and Alternative Perspectives*, 10 J. OF BEHAV. DECISION

MAKING 269, 269 (1997) (“Calibration (or reliability) supposedly measures the accuracy of probability judgments . . .”).

⁵¹ *Id.*

⁵² *Id.* at 276 (describing an experiment using two weather forecasters’ probability predictions was to demonstrate how laypersons tend to attribute success to probability judgments).

⁵³ See Moore & Healy, *supra* note 47, at 509 (reporting that participants in a quiz-taking experiment overestimated their performance on difficult quizzes).

⁵⁴ *Id.* at 508.

⁵⁵ *Id.*

⁵⁶ See *id.* (describing that participants earned more money based on their performance relative to that of the others and on the accuracy with which they predicted their own score).

⁵⁷ *Id.* at 510 (“This 90.5% confidence is significantly greater than the 73.1% accuracy; a binomial test confirmed that the odds of observing accuracy rates of 73.1% or lower for 90.5% confidence intervals are about 6 per million.”).

⁵⁸ See Moore & Healy, *supra* note 47, at 510 (“Our participants’ 73.1% hit rate may appear substantially above prior findings, which documented hit rates of 30% to 50% for 90% confidence intervals[.]”) (citation omitted).

⁵⁹ *Id.* (“Hit rates were substantially higher at the interim (85.6%) and posterior (84.4%) phases, consistent with research showing that knowledge of the judgment domain moderates the strength of overprecision[.]”) (citation omitted).

⁶⁰ See Baruch Fischhoff et al., *Knowing with Certainty: The Appropriateness of Extreme Confidence*, 3 J. EXPERIMENTAL PSYCHOL.: HUM. PERCEPTION & PERFORMANCE 552, 552 (1977) (presenting studies that suggest that people are “too often” wrong about questions they are certain they know the answer to).

⁶¹ See *id.* at 558. The author requested subjects to respond in proportions (i.e. 10:1), which in some cases provide more accurate representations than percentages. When reporting results, the article tends to use proportions for the level of certainty, and percentages for the level of accuracy. For ease of reading, this article has converted all the proportions into approximate percentages, while keeping the proportions in parenthesis for those who prefer its accuracy.

⁶² *Id.* at 556.

⁶³ *Id.* at 558 (“Over the large number of questions for which people gave odds of 1,000,000:1 or higher, they were wrong an average of about 1 time out of every 16.”).

⁶⁴ Keren, *supra* note 49, at 274 (asserting that there is “sufficient empirical evidence to dismiss the claim that overconfidence is entirely a statistical artifact”).

⁶⁵ See generally ALVIN GOLDMAN, *PHILOSOPHICAL APPLICATIONS OF COGNITIVE SCIENCE* 14-15 (1993) (explaining that the brain may more easily interpret and retrieve information that supports a prior conception than it would information that negates that conception, even if there is more negative evidence).

⁶⁶ See Dan Simon, *A Third View of the Black Box: Cognitive Coherence in Legal Decision Making*, 71 U. CHI. L. REV. 511, 511-13 (2004) (introducing coherence-based reasoning to the legal debate about decision-making in an attempt to resolve why judges and juries in criminal trials decide the way they do).

⁶⁷ *Id.* at 513.

⁶⁸ *Id.* at 519.

⁶⁹ *Id.* at 524 (“Participants were first presented with a pre-test that contained a number of apparently unrelated vignettes.”).

⁷⁰ *Id.*

⁷¹ *Id.* (“Ratings were made on an eleven-point scale, ranging from -5 [sic] (“strongly disagree”) to +5 (“strongly agree”), with a rating of 0 indicating neutrality. In total, participants rated twelve inferences.”).

⁷² *Id.* at 529.

⁷³ *Id.* (“The second phase of the experiment presented participants with a whodunit case that involved a theft of money from a construction company’s safe. The sole question in the case concerned the identity of the perpetrator. One of the company’s employees, Jason Wells, was suspected of committing the theft. Participants were asked to play the role of jurors assigned to decide the case.”).

⁷⁴ *Id.* at 529-30 (“Four items tended to incriminate the defendant: an eyewitness identification; a security camera that captured a car like the one defendant drives screeching out of the parking lot soon after the crime was committed; a call the defendant made on his cell phone from the vicinity of the building soon after the crime; and an apparent grudge that he held against the company Three pieces of evidence had an exonerating effect: he was seen far away from the crime scene later that evening; payments he made after the crime came from legitimate family transactions; and it was possible that he was working harder to make amends with the company . . .”).

⁷⁵ *Id.* at 530.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.* (“[The] questions were essentially identical to those asked on the pre-test.”).

⁸¹ See *id.* at 530-32 (explaining that, as predicted, “participants demonstrated remarkably high levels of confidence in their decisions, regardless of their verdicts”).

⁸² See *id.* at 531 (“[B]y the point of decision, the mental models of the evidence are skewed toward strong support of the respective verdicts. Notably, these coherent representations were not inherent to the perceptions of the evidence itself. Rather, they resulted from the polarizing transformation of the originally ambiguous and nonprobative evidence toward either one of the two coherent mental models, each of which was decidedly probative with regard to the respective verdict.”).

⁸³ See *id.* at 531.

⁸⁴ *Id.*

⁸⁵ *Id.* at 525 (describing the experiment and explaining that despite the complexity of the tort fact pattern, the participants were very confident in their verdicts).

⁸⁶ *Id.* at 526.

⁸⁷ See Moore & Healy, *supra* note 47, at 510 (“It is worth noting that confidence and accuracy were nonetheless correlated.”); see also Simon, *supra* note 65, at 549 (conceding that “it cannot be said that [coherence] shifts necessarily result in objectively wrong decisions”).

⁸⁸ See Simon, *supra* note 65, at 549 (asserting that coherence shifts significantly increase the risk of error in decision making by fact finders in trial).

⁸⁹ See *id.* at 516 (“Coherence-based reasoning applies to mental tasks in which the person must make a discrete decision or judgment in the face of complexity.”).

⁹⁰ See generally *id.* at 516-17 (describing that most legal cases that end up in litigation are complex, and thus may lead to coherence-based reasoning).

⁹¹ See Moore & Healy, *supra* note 47, at 504 (theorizing that people underestimate their performance when performance is actually high, but overestimate their performance when performance is low).

⁹² See *id.* at 503 (“Underestimation of performance is most likely to occur on easy tasks, on easy items, when success is likely, or when the individual making the estimate is especially skilled[.]”) (citations omitted).

⁹³ See Simon, *supra* note 65, at 584-86 (arguing that coherence-based reasoning can remedy

the misconceptions about decision-making that lead to “systematic errors” in the legal system).

⁹⁴ See *infra* Section V, How Biases We Cannot See Affect Conscious Decision Making.

⁹⁵ See Simon, *supra* note 66.

⁹⁶ *Id.* at 531.

⁹⁷ See, e.g., Jon Hanson & David Yosifon, *The Situational Character: A Critical Realist Perspective on the Human Animal*, 93 GEO. L.J. 1, 102 (2004) (presenting a study finding a bias among participants in favor of “more respectable” women in rape cases).

⁹⁸ V. S. RAMACHANDRAN, A BRIEF TOUR OF HUMAN CONSCIOUSNESS: FROM IMPOSTOR POODLES TO PURPLE NUMBERS 1 (Pearson Educ. Inc. 2004).

⁹⁹ See DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS (Harper Perennial ed., 2010), for a highly accessible introduction to behavioral economics; see Daniel Kahneman, *Maps of Bounded Rationality: Psychology for Behavioral Economics*, 93 AM. ECON. REV. 1449 (2003) for a more technical yet still accessible piece adapted from a lecture given by Kahneman when he received the Nobel Prize in Economics; see also EXPERIMENTAL PHILOSOPHY (Joshua Knobe & Shaun Nichols eds., Oxford Univ. Press 2008) [hereinafter EXPERIMENTAL PHILOSOPHY] for an excellent anthology from two of the leaders in the field of experimental philosophy; Hanson & Yosifon, *supra* note 97, at 6 for a good introduction to the potential uses of social science in the law.

¹⁰⁰ See, e.g., ARIELY, *supra* note 99, at xviii-xx (describing behavioral economics as a merging of psychology and economics that attempts to analyze and predict human irrationality).

¹⁰¹ Namely, Daniel Kahneman.

¹⁰² See generally Christopher Michael McKeon, *Rape Trauma Syndrome: A Proposal for Liberal Admissibility in Connecticut*, 11 BRIDGEPORT L. REV. 623, 623-28 (1991) (examining the short-term and the long-term effects of this form of post traumatic stress disorder suffered by many rape victims).

¹⁰³ See *infra* notes 105 and 109 (providing examples of possible unconscious biases harbored by jurors in rape cases).

¹⁰⁴ Hanson & Yosifon, *supra* note 97, at 102-3 (presenting a study in which “[s]ubjects participated in a simulated jury exercise in which a criminal defendant was said to have raped one of three victims. The victims had been arrayed along a continuum of respectability,” ranging from the “most respectable” virgin to the “least respectable” divorcee).

¹⁰⁵ *Id.* at 102.

¹⁰⁶ *Id.* (“[T]he knowledge that innocent, highly respectable females can be raped was particularly threatening to the subjects’ belief that the world is just, and to avoid the threat posed by this type of admission, it was necessary to find fault with the actions of the victim.”).

¹⁰⁷ Note that there are no normative claims being made as to virtuousness. Instead it is a descriptive claim about, likely tacit, societal views.

¹⁰⁸ See, e.g., Marsha B. Jacobson, *Effects of Victim’s and Defendant’s Physical Attractiveness on Subjects’ Judgments in a Rape Case*, 7 SEX ROLES 247, 247 (1981) (concluding that “both the attractive defendant and the rapist of an unattractive defendant were less likely to be seen as guilty and that the attractive defendant received a shorter recommended prison term than the unattractive defendant”).

¹⁰⁹ See *id.*

¹¹⁰ See *id.* at 252.

¹¹¹ See *id.*

¹¹² PROJECT IMPLICIT, <https://implicit.harvard.edu/implicit> (last visited Oct. 13, 2012) (providing online interactive implicit bias tests).

¹¹³ Anthony G. Greenwald et al., *Measuring Individual Differences in Implicit Cognition: The Implicit Association Test*, 74 J. PERSONALITY & SOC. PSYCHOL. 1464, 1473 (1998).

¹¹⁴ This explanation is for simple demonstrative purposes, leaving out some of the design elegance for the sake of not being bogged down by details that are not particularly material to this article. For example, the

order in which the tasks are presented to participants changes to account for ordinal effects.

¹¹⁵ Greenwald, *supra* note 113, at 1474 (“More specifically, the data indicated an implicit attitudinal preference for White over Black, manifest as faster responding for the White + pleasant combination [than the] Black + pleasant combination.”).

¹¹⁶ See *id.*

¹¹⁷ See *id.* at 1478 (claiming that a major benefit of the IAT could be its potential to “resist self-preservational forces that can mask personally or socially undesirable evaluative associations” and thus detect biases and prevent their harmful effects).

¹¹⁸ Jerry Kang & Mahzarin R. Banaji, *Fair Measures: A Behavioral Realist Revision of “Affirmative Action,”* 94 CAL. L. REV. 1063, 1074 (2006).

¹¹⁹ *Id.*

¹²⁰ *Id.* (“Consistent with the prevalence of coronary artery disease (CAD) in Black and White Americans, Black patients were more likely to be diagnosed with CAD than White patients.”).

¹²¹ *Id.* (“[T]reatment with state of the art Thrombolytic Therapy was given equally to both Black and White patients thereby creating a greater discrepancy between diagnosis and treatment for Black than White patients.”).

¹²² *Id.*

¹²³ *Id.* at 1074-75 (“[E]ven when the participants (doctors) were making recommendations in a serious context and were arguably subject to strong demand effects to demonstrate that they were colorblind, they still engaged in disparate treatment that correlated with their implicit biases.”).

¹²⁴ Justin D. Levinson et al., *Guilty by Implicit Racial Bias: The Guilty/Not Guilty*

Implicit Association Test, 8 OHIO ST. J. CRIM. L. 187, 189 (2010) (“We designed this IAT to examine whether people hold implicit associations between African Americans and criminal guilt, a finding that would call into question criminal law’s presumption of innocence and evoke larger questions of racial justice.”).

¹²⁵ *Id.* at 201 (“Participants in the empirical study were sixty-seven jury eligible undergraduate and graduate students at the University of Hawaii who participated in the study for extra course credit.”).

¹²⁶ *Id.* at 204.

¹²⁷ See *id.* at 203 (describing the evidence evaluation test, in which participants read a story of an armed robbery, saw crime scene photos, and were given a photo of either a dark-skinned perpetrator or a light-skinned one).

¹²⁸ *Id.*

¹²⁹ Levinson, *supra* note 124, at 203.

¹³⁰ *Id.* at 206.

¹³¹ *Id.*

¹³² See Gregory Mitchell, *Second Thoughts*, 40 MCGEORGE L. REV. 687, 694 (2009) (proposing “greater oversight and paternalistic protection from the government”).

¹³³ See Paul Butler, *Racially Based Jury Nullification: Black Power in the Criminal Justice System* 105 YALE L.J. 677, 679 (1995) (arguing that it is sometimes appropriate for Black jurors to refuse to send Black defendants to jail in some misdemeanor crimes, even when they feel convinced beyond a reasonable doubt that the defendant is guilty).

¹³⁴ See *infra* notes 136-47 (describing several surprising studies that show unexpected biases under certain conditions).

¹³⁵ See *supra* notes 118 and 124 (illustrating the ability of the IAT to uncover biases that people do not even know they have, making the biases virtually undetectable outside of testing).

¹³⁶ See, e.g., Levinson, *supra* note 124, at 189 (theorizing that the authors’ IAT could shed negative light on the presumption of innocence in criminal trials and implicate racial injustice and prejudice throughout the criminal law system).

¹³⁷ Richard E. Nisbett & Timothy DeCamp Wilson, *Telling More Than We Can Know: Verbal Reports on Mental Processes*, 84 PSYCHOL. REV. 231, 243 (1977).

- ¹³⁸ *Id.* at 243-44 (hypothesizing that while there was no obvious explanation for the bias, it may have been due to the tendency of shoppers to refrain from making a decision until they have seen all the available products).
- ¹³⁹ *Id.* at 243.
- ¹⁴⁰ *Id.*
- ¹⁴¹ *Id.* (reporting that that the farthest right object was significantly over chosen, with the stockings on the far right being chosen almost four times as often as those on the far left).
- ¹⁴² *Id.* at 243-44.
- ¹⁴³ Nisbett & Wilson, *supra* note 137, at 244.
- ¹⁴⁴ *Id.* at 237 (describing another experiment in which researchers gave subjects placebo pills and told the subjects that the pill would produce “heart palpitations, breathing irregularities, hand tremor, and butterflies in the stomach.” After taking the pill, the experimenters asked the subjects to endure a series of shocks in which the amperage was slowly heightened. Researchers would heighten the shocks until the subject said they could no longer take the pain. A control group that was not given placebo pills went through an otherwise identical experiment. Those who had been administered a placebo were able to take, on average, four times as much amperage as those who did not. The experimenters anticipated this result, expecting that patients to attribute their symptoms to the pill and not the shock. Surprisingly, however, (though perhaps not as surprising as the fact that the experiment passed ethics boards) subjects, when asked, stated that they did not believe the pill had any role in their ability to take the shocks. Researchers even pressed subjects, but a typical response would be, “[n]o, like I said, I was too busy worrying about the shock.”).
- ¹⁴⁵ *Id.*
- ¹⁴⁶ John Doris, *Moral Psychology: Empirical Approaches*, STANFORD ENCYCLOPEDIA OF PHIL., (April 19, 2006), <http://plato.stanford.edu/entries/moral-psych-emp> (describing a variety of social science experiments, including one conducted by Mathews and Canon, that fall under the title of “situationalism”).
- ¹⁴⁷ Kenneth E. Mathews, Jr. & Lance Kirkpatrick Canon, *Environmental Noise Level as a Determinant of Helping Behavior*, 32 J. PERSONALITY & SOC. PSYCHOL. 571, 573 (1975).
- ¹⁴⁸ Doris, *supra* note 146 (arguing that surrounding circumstances, rather than individual dispositions, are the key factor in determining peoples moral actions. However, the fact that individuals are unaware of *why* they acted the way they did in each of these cases advances the position in this section as well.).
- ¹⁴⁹ See generally Lillquist, *supra* note 37, at 175-76 (discussing the malleable and mutable nature of the reasonable doubt standard).
- ¹⁵⁰ See Walter W. Steele, Jr. & Elizabeth G. Thornburg, *Jury Instructions: A Persistent Failure to Communicate*, 67 N.C. L. REV. 77, 94-95 (1988) (presenting cases that show juries often misapply the law because they do not understand the instructions and analyzing a deeper problem of incomprehensible instructions potentially leading to a loss of faith in the legal system).
- ¹⁵¹ See *infra* Section VI, Setting Standards through “Rule-Based Bias Filtering”.
- ¹⁵² See Simon, *supra* note 66, at 511-31 (describing two experiments implicating this problem and discussing the potential ramifications for the legal system).
- ¹⁵³ See, e.g., Hanson & Yosifin, *supra* note 97, at 102-103 (illustrating how juror bias toward “more respectable” women may influence the outcome of rape cases).
- ¹⁵⁴ See, e.g., Steele & Thornburg, *supra* note 150, at 99 (analyzing the problem of juror confusion and the view of many lawyers that the cost of clarification is too high).
- ¹⁵⁵ See Butler, *supra* note 132, at 679 (asserting that in a system where White people make and enforce the law, it is “the moral responsibility of [B]lack jurors to emancipate some guilty [B]lack outlaws”).
- ¹⁵⁶ See *id.* at 703-05 (presenting some common critiques of jury nullification).
- ¹⁵⁷ See Mathews and Canon, *supra* note 147, at 573 (finding that high levels of environmental noise biased people against helping an apparently injured individual).
- ¹⁵⁸ See generally Mitchell, *supra* note 132, at 687 (presenting evidence that humans can override unconscious biases).
- ¹⁵⁹ See *id.* at 722 (analyzing the first level of thought, where bias and irrationality can influence us, and the second level, where we can significantly control the first level).
- ¹⁶⁰ See generally Lillquist, *supra* note 37, at 175-76 (arguing that the vagueness of the reasonable doubt standard gives jurors the flexibility to call for more or less certainty depending on the facts of the case).
- ¹⁶¹ See *supra* Section III for a discussion of knowledge by acquaintance.
- ¹⁶² Harvard Law Review Association, Note, *Reasonable Doubt: An Argument Against Definition*, 108 HARV. L. REV. 1955, 1968 (1995).
- ¹⁶³ Simon, *supra* note 66, at 531.
- ¹⁶⁴ See *id.*
- ¹⁶⁵ The fewer facts before the jury at the time they decide on a reasonable doubt model, the fewer biases they may be exposed to. However, it is realistic that jurors will have been exposed to some facts even before opening statement due to *voir dire*.
- ¹⁶⁶ Harvard, *supra* note 162, at 1970 (expressing that jurors should be allowed to determine the meaning of “reasonable doubt,” in part because they represent the community and thus should be the ones making the value judgment).
- ¹⁶⁷ See *infra* notes 171-73 (referencing Mitchell *supra* note 132 & Simon *supra* note 66).
- ¹⁶⁸ See Benjamin Libet, *The Timing of Mental Events: Libet’s Experimental Findings and Their Implications*, 11 CONSCIOUSNESS & COGNITION 291, 291 (2002) (finding that the brain begins to initiate a “voluntary” act at least 350 milliseconds before the person is aware she wants to act).
- ¹⁶⁹ *Id.* at 292 (“Libet noted that the conscious function still had enough time to affect the outcome of the process; that is, it could allow the volitional initiative to go to completion, it could provide a necessary trigger for the completion, or it could block or veto the process and prevent the act’s appearance.”).
- ¹⁷⁰ E-mail from Robert A. Burton, former Chief of Neurology Div. UCSF-Mt. Zion Hosp. (August 3, 2008, 11:53 PST) (on file with author) (“I completely agree with Libet and the idea of the veto power of conscious thought. If you see conscious thoughts as being subsequent inputs into the hidden layer, you can see where a conscious decision can then be incorporated into unconscious decision-making.”).
- ¹⁷¹ See, e.g., Simon *supra* note 66, at 543-44; Mitchell *supra* note 131, at 687.
- ¹⁷² Simon, *supra* note 66, at 543-44.
- ¹⁷³ Mitchell, *supra* note 132, at 687 (discussing the human ability to self-correct biases and how the law can utilize this self-correction to lead to better outcomes).
- ¹⁷⁴ *Id.* at 688 (asserting that normally functioning humans are capable of “metacognition,” meaning humans can think about their own thoughts).
- ¹⁷⁵ *Id.* at 687 (claiming that while biases exist at the level of first-order thoughts, there is strong evidence supporting human ability to self-correct these biases).
- ¹⁷⁶ *Id.*
- ¹⁷⁷ *Id.*
- ¹⁷⁸ Mitchell, *supra* note 132, at 702.
- ¹⁷⁹ See *supra* Sections IV & V for an overview of the descriptive claim. The Sections describe how the feeling of certainty coupled with bias leads people to, much too easily, feel proof beyond a reasonable doubt has been met.
- ¹⁸⁰ Mitchell, *supra* note 132, at 715 (“Conscious attention to the law’s prohibitions may lead to the online monitoring of our behavior for bias,

but conscious thoughts about the appropriateness or inappropriateness of certain considerations may lead to offline debiasing as well, through the creation of metacognitive validity tags.”).

¹⁸¹ *Id.* at 702–3 (“[T]he unconscious is less prejudiced and less stereotype-driven than many psychologists and legal scholars have assumed.”).

¹⁸² *See generally* Kang and Banaji, *supra* note 118.

¹⁸³ *See id.* These cases are particularly good because the effects are seen even in medical care decisions. These cases are plagued by biases we are conscious of and would most likely want to counter, yet are evidently unable to.

¹⁸⁴ *See supra* Section V (outlining different biases and their effects).

¹⁸⁵ Mitchell, *supra* note 132 at 697 (“Conscious vigilance and deliberate introspection certainly can lead to efforts to avoid bias, but we now know that bias avoidance can also occur as a result of vague or inchoate thoughts, feelings operating at the fringe of consciousness, and even through processes operating fully below the level of consciousness.” The thoughts may be “vague” or “inchoate” but there needs to be thoughts nonetheless to create the impetus for correction.).

¹⁸⁶ *See, e.g.,* Firoz Dattu, *Illustrated Jury Instructions: A Proposal*, 22 *LAW & PSYCHOL. REV.* 67, 81 (1998) (arguing that “the overwhelming conclusion is that pictures enhance comprehension and memory” with regard to jury instructions).

¹⁸⁷ Diamond, *supra* note 34, at 1723 (citing a study that showed after receiving a traditional presumption of innocence and reasonable doubt instruction “only fifty percent of the jurors understood that the defendant did not have to present any evidence of his innocence . . . and two percent believed that the burden of proof of innocence lay with the defendant”).

¹⁸⁸ Lillquist, *supra* note 37, at 175–76 (arguing in favor of a cost-benefit model of reasonable doubt with a flexible standard of proof depending on the gravity of the crime alleged).

¹⁸⁹ *See id.* (discussing this type of flexible standard).

¹⁹⁰ *See id.*

¹⁹¹ *See* Lillquist, *supra* note 37, at 184–95 (discussing the term’s vagueness); *see also* Steele & Thornburg, *supra* note 150, at 94–5 (addressing the problems with the unintelligible reasonable doubt jury instructions).

¹⁹² *See* Simon, *supra* note 66, at 511–13 (proposing research studying the effect of coherence-based reasoning on juries).

¹⁹³ *See, e.g.,* Kang & Banaji, *supra* note 118, at 1074–75 (analyzing racial biases in doctors).

¹⁹⁴ *See* Simon, *supra* note 66 at 511–13.

ABOUT THE AUTHOR

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