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Judging by heuristic Cognitive illusions in judicial decision making

By Chris Guthrie, Jeffrey J. Rachlinski, and Andrew J. Wistrich

Many people rely on mental shortcuts, or heuristics, to make complex decisions, but this sometimes leads to inaccurate inferences, or cognitive illusions. A recent study suggests such cognitive illusions influence judicial decision making.

The institutional legitimacy of the judiciary depends on the quality of the judgments that judges make. Even the most talented and dedicated judges surely make occasional mistakes, but the public expects judges to avoid making *systematic* errors that favor particular parties or writing opinions that em-

rely on mental shortcuts or “heuristics” to make complex decisions.¹ Reliance on heuristics facilitates good judgment most of the time, but in some circumstances causes people to draw systematically inaccurate inferences—in other words, these heuristics can create *cognitive illusions* of judgment.

Just as certain patterns of visual stimuli can fool people’s eyesight, leading them to see images that are not really present, certain fact patterns can fool people’s judgment, leading them to believe things that are not really true. The systematic nature of the errors that these illusions produce can be analogized to the sort of errors that an expert marksman makes if his rifle sight is out of alignment: his shots land in a tight cluster, but away from the bullseye.

Decades of research indicate that cognitive illusions affect the way juries decide cases.² But are judges any better? On the one hand, judges are

intelligent, experienced, well-trained, and highly motivated decision makers, so it seems reasonable to speculate they might be immune to such illusions. On the other hand, research on judgment and choice suggests that cognitive illusions plague many professionals, including doctors, real-estate appraisers, engineers, accountants, options traders, military leaders, psychologists, and even lawyers.³ Systematic, controlled studies of judicial decision making

CHRIS GUTHRIE is a professor at Vanderbilt University Law School.

JEFFREY J. RACHLINSKI is a professor at Cornell Law School.

ANDREW J. WISTRICH is a United States Magistrate Judge, United States District Court, Central District of California.

bed these mistakes into the substantive law.

Psychological research on human judgment, however, suggests that this expectation might be unrealistic. This research indicates that people

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1. See Tversky and Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124 (1974).

2. See MacCoun, *Experimental Research on Jury Decision Making*, 244 SCIENCE 1046 (1989).

3. See generally, PLOUS, *THE PSYCHOLOGY OF JUDGMENT AND DECISION MAKING* 258 (1993) (observing that “several studies have found that experts display either roughly the same biases as college students or the same biases at somewhat reduced levels”).

egocentric bias
inverse fallacy
hindsight bias
framing
anchoring

are rare,⁴ and whether judges are susceptible to these cognitive illusions remains an open empirical question.

To begin to answer this question, we conducted an empirical study to determine whether five common cognitive

illusions—anchoring, framing, hindsight bias, inverse fallacy, and egocentric bias—would influence the decision making of a sample of 167 federal magistrate judges. We administered a brief questionnaire to these judges during a general educational conference sponsored by the Federal Judicial Center. We found that each of these cognitive

illusions influenced their decision-making processes.

Anchoring

When people make estimates (e.g., the fair market value of a house), they commonly rely on the initial value available to them (e.g., the list price). That initial value tends to “an-

4. A few studies have demonstrated the effects of various cognitive illusions in judges: Anderson, et. al., *Evaluation of Auditor Decisions: Hindsight Bias Effects and the Expectation Gap*, 14 J. ECON. PSYCHOL. 711, 726-727 (1993) (hindsight bias); Eisenberg, *Differing Perceptions of Attorney Fees in Bankruptcy Cases*, 72 WASH U. L. Q. 979 (1994) (egocentric biases); Viscusi, *How do Judges Think About Risk?* 1 AM. L. & ECON. REV. 26 (1999) (over-estimation of small risks, hindsight bias, and ambiguity aversion); Robbenolt, *Punitive Damage Decision Making: The Decisions of Citizens and Trial Court Judges*, 26 LAW & HUM. BEHAV. 315 (2002) (various biases in assessment of punitive damages).

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chor” their final estimates. Reliance on an anchor can be reasonable because an anchor might convey relevant information about the actual value. Even anchors that do *not* provide any useful information, however, can affect people’s numeric estimates.

For example, people asked to estimate the average daytime temperature in downtown San Francisco provided higher estimates when first asked to determine whether the correct answer was greater or less than the absurdly high anchor of 558 *degrees* Fahrenheit.⁵ In litigation, anchors such as statutory damage caps and plaintiffs’ attorneys’ requests for damages have been shown to influence the size of damage awards even when they convey no information about the extent of the plaintiff’s injury.⁶

We tested for the effect of anchoring on the judges in our sample by presenting them with the following description of a serious personal injury suit in which only damages were at issue:

Suppose that you are presiding over a personal injury lawsuit that is in federal court based on diversity jurisdiction. The defendant is a major company in the package delivery business. The plaintiff was badly injured after being struck by one of the defendant’s trucks when its brakes failed at a traffic light. Subsequent investigations revealed that the braking system on the truck was faulty, and that the truck had not been properly maintained by the defendant. The plaintiff was hospitalized for several months, and has been in a wheelchair ever since, unable to use his legs. He had been earning a good living as a free-lance electrician and had built up a steady base of loyal customers. The plaintiff has requested damages for lost wages, hospitalization, and pain and suffering, but has not specified an amount. Both parties have waived their rights to a jury trial.

We asked half of the judges “how much would you award the plaintiff in compensatory damages?” We asked the other half of the judges the same question, but only after we first asked them to rule on a motion filed by the defendant to have the case dismissed for ostensibly failing to meet the jurisdictional minimum in a di-

Condition	Mean	1 st Quartile (25th percentile)	2 nd Quartile (median)	3d quartile (75th percentile)
No anchor	\$1,249,000	\$500,000	\$1,000,000	\$1,925,000
Anchor	\$882,000	\$288,000	\$882,000	\$1,000,000

versity suit (\$75,000). We hypothesized that the \$75,000 damage threshold mentioned in the motion would serve as an anchor, even though the motion was frivolous.

Consistent with this hypothesis, we found that first ruling on the motion had a dramatic effect on the judges’ damage awards, as shown in Table 1.

Those judges who were asked only to determine the damage award provided an average estimate of \$1,249,000, while those judges who first ruled on the motion provided an average estimate of only \$882,000. Also, three-quarters of the judges who ruled on the anchor provided damage award estimates that were lower than the median award provided in the no anchor condition. Even though the motion was baseless, it forced the judges to consider whether the case was worth more than \$75,000. In estimating the amount of damages to be awarded, the judges in the anchoring condition began with \$75,000 and adjusted upward, albeit inadequately from there.

These results are difficult to compare with other anchoring studies because we used a low anchor (most other studies use a high one) and we used a pre-trial motion to introduce the anchor (most studies use a damage request by a plaintiff’s lawyer). That said, the results of our anchoring problem—providing a low anchor reduced the award by 29 percent—are similar to the results of the one mock-jury study (by Malouff and Schutte) that also involved the use of a low anchor. Although the percentage reduction in mean awards by the non-judges in that study exceeded the one we found in judges (46 percent versus 29 percent), we found a greater mean reduction in absolute

dollars (roughly \$77,000 versus \$368,000).

These results likely overstate the effect of an anchor on a judge deciding a real case. Our materials were necessarily brief relative to an actual case in which a judge would have access to much more information, probably including conflicting numeric estimates. Although the anchoring effect is real, other factors might alter or diminish its impact in an actual case.

Framing

When people make risky or uncertain decisions—such as deciding whether to settle a case or to proceed to trial—they tend to categorize their decision options as potential gains or losses from the status quo.⁷ This categorization, or “framing,” of decision options influences judgment concerning the wisdom of incurring risk. People tend to prefer certainty when choosing between options that appear to represent gains and to prefer risk when choosing between options that appear to represent losses. For example, most people believe that a certain gain of \$100 is preferable to a 50 percent chance of winning \$200 but believe that a 50 percent chance of losing \$200 is preferable to a certain \$100 loss.

Framing can have a profound impact on the assessment of civil law-

5. Plous, *supra* n. 3, at 146 (citing to an unpublished study by Quattrone and colleagues).

6. See Chapman & Bornstein, *The More You Ask For the More You Get: Anchoring in Personal Injury Verdicts*, 10 APP. COG. PSYCHOL. 519 (1996); Malouff & Schutte, *Shaping Juror Attitudes: Effects of Requesting Different Damage Amounts in Personal Injury Trials*, 129 J. SOC. PSYCHOL. 491 (1989); Robbenolt & Studebaker, *Anchoring in the Courtroom: The Effects of Caps on Punitive Damages*, 23 LAW & HUM BEHAV. 353, 358-361 (1999).

7. See Kahneman & Tversky, *Choices, Values, and Frames*, 30 AM. PSYCHOLOGIST 341 (1984).

suits because litigation produces a natural frame.⁸ In most lawsuits, plaintiffs choose either to accept a settlement payment from the defendant or to gamble that further litigation will produce a larger gain. Most defendants, by contrast, choose either to make a certain settlement payment to the plaintiff or to gamble that further litigation will reduce the amount they must pay. Plaintiffs, in other words, often choose between options that appear to represent gains, while defendants often choose between options that appear to represent losses.⁹ Consequently, one might expect there to be more pressure on plaintiffs to accept settlement offers than there is on defendants to make settlement offers. Framing effects might lead ostensibly neutral mediators, including judges, to encourage plaintiffs to accept settlement offers that are much lower than the expected value of the lawsuit.

To determine whether judges' settlement recommendations might be influenced by framing, we presented each of the judges with a hypothetical fact pattern to evaluate:

Imagine that you are presiding over a case in which a plaintiff has sued a defendant for \$200,000 in a copyright action. Both the plaintiff and the defendant are mid-sized publishing companies with annual revenues of about \$2.5 million per year. They are represented by competent attorneys who have not tried cases before you in the past. You believe that the case

is a simple one, but it presents some tough factual questions. There is no dispute as to the amount at stake, only as to whether the defendant's actions infringed on the plaintiff's copyright. You believe that the plaintiff has a 50 percent chance of recovering the full \$200,000 and a 50 percent chance of recovering \$0. You expect that should the parties fail to settle, each will spend approximately \$50,000 at trial in litigation expenses. Assume that there is no chance that the losing party at trial will have to compensate the winner for these expenses.

We then asked the judges to indicate whether they thought the parties should settle the case. Half of the judges reviewed the case from the plaintiff's perspective: "You have learned that the defendant intends

from the defendant's perspective.

The results supported this hypothesis. Among the judges evaluating the case from the plaintiff's (gains) perspective, 39.8 percent indicated that they thought the plaintiff should accept the \$60,000 settlement offer, but only 25 percent of the judges evaluating the case from the defendant's (losses) perspective indicated that they thought the defendant should pay the \$140,000 settlement payment proposed by plaintiff.

Although the frame of the problem influenced the judge's evaluations, it had less effect on the judges than on laypersons. The judges were 15 percentage points more inclined to say that plaintiff rather than defendant should settle, while

other studies in which law students and undergraduates evaluated similar materials have found 14 to 51 percentage-point differences between subjects in the two conditions.¹⁰

Hindsight bias

Hindsight vision is 20/20. People overestimate their own ability to have predicted the past and

believe that others should have been able to predict events better than was possible.¹¹ Psychologists call this tendency "hindsight bias."

Few judgments in ordinary life require people to assess the predictability of past outcomes, but such judgments are pervasive in the law. For example, determining whether a defendant was negligent requires judges and juries to evaluate the reasonableness of precautions that the defendant took against causing an accident even though they know that these precautions failed to prevent injury. Precautions that seem reasonable to people before the fact can seem negligent after the fact.

To test whether judges are susceptible to the hindsight bias, we presented each of the judges who participated in our study with a hypothetical fact pattern based on an actual case:

Judgments that require people to assess the predictability of past outcomes are pervasive in the law.

to offer to pay the plaintiff \$60,000 to settle the case. Do you believe that the plaintiff should be willing to accept \$60,000 to settle the case?" The other half reviewed the case from the defendant's perspective: "You have learned that the plaintiff intends to offer to accept \$140,000 to settle the case. Do you believe that the defendant should be willing to pay \$140,000 to settle the case?"

In both instances, the judges were confronted with proposed settlement offers that exceeded the expected judgment at trial by \$10,000. Nevertheless, the plaintiff seemed to be choosing between gains, while the defendant seemed to be choosing between losses. We hypothesized that the judges evaluating this case from the plaintiff's perspective would be more likely to recommend settlement than those judges looking at it

8. See Rachlinski, *Gains, Losses, and the Psychology of Litigation*, 70 So. CAL. L. REV. 113, 129 (1996).

9. *Id.* But see Guthrie, *Framing Frivolous Litigation: A Psychological Theory*, 67 U. CHI. L. REV. 163 (2000) (explaining that litigants' risk preferences are reversed in frivolous or low-probability litigation).

10. See Korobkin & Guthrie, *Psychological Barriers to Litigation Settlement: An Experimental Approach*, 93 MICH. L. REV. 107, 128-142 (1994); Rachlinski, *supra* n. 8, at 135-144.

11. See Fischhoff, *For Those Condemned to Study the Past: Heuristics and Biases in Hindsight*, in Kahneman, Slovic & Tversky (eds) *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES*. 335, 341 (1982).

In 1991, a state prisoner filed a *pro se* Section 1983 action in Federal District Court against the Director of the Department of Criminal Justice in his state, asserting, among other things, that the prison had provided him with negligent medical treatment in violation of Section 1983. The district court further found that the plaintiff knew his claims were not actionable because he had made similar claims several years earlier in a case that had been dismissed by the court. Thus, the district court sanctioned the plaintiff pursuant to Rule 11, ordering him to obtain the permission of the Chief Judge in the district before filing any more claims. The plaintiff appealed the district court's decision.

We randomly assigned the judges to one of three conditions. Judges in each condition were told that the court of appeals had either: affirmed the sanction; remanded the case to the district court for imposition of a less onerous sanction; or vacated the sanction. We then asked all of the judges: "In light of the facts of the case, as described in the passage above, which of the following possible outcomes of the appeal was most likely to have occurred (assume that the three outcomes below are the only possible ones)?" We hypothesized that the judges would be unable to escape the influence of having been given "knowledge" of the outcome when assessing which outcome was most likely to have occurred.

Consistent with this hypothesis, the outcome significantly influenced judges' assessments. As shown in Table 2, judges informed of a particular outcome were much more likely to have identified that outcome as the most likely to have occurred.

Overall, the sum of the percentage of judges in each of the three conditions who selected the outcome that they were provided as the "most likely to have occurred" was 172 percent, whereas it would have been 100 percent if learning the outcome had had no effect on the judges. Thus, the judges exhibited susceptibility to the hindsight bias.

Prior studies have demonstrated that the hindsight bias affects judges' assessments of negligence and recklessness.¹² Our study suggests that judges are also vulnerable

Table 2: Hindsight bias: percentage of judges identifying each outcome as the most likely, by condition.

Outcome provided	% Selecting as most likely outcome		
	Affirmed	Remanded	Vacated
Affirmed	81.5	7.4	11.1
Remanded	40.4	38.6	21.1
Vacated	27.8	20.4	51.9

Note: Boldface numbers indicate the percentage of judges identifying the given outcome as the most likely.

to the bias in procedural contexts, such as judgments regarding: whether Rule 11 sanctions should be imposed (a motion or allegation can seem more frivolous after a judicial ruling denying it); and whether counsel provided ineffective assistance (decisions a lawyer makes in the course of representing a client can seem less competent after an undesirable outcome is obtained).

We estimate that 24 percent of the judges in our study made a different choice because of the hindsight bias (172 percent minus 100 percent divided by 3 conditions). This result is comparable to data from mock-jury studies.¹³ It is also comparable to the estimate from a statistical review of studies of the hindsight bias, which indicated that the hindsight bias alters the decisions of 27 percent of decision makers.¹⁴

Inverse fallacy

When making categorical judgments, people tend to discount the importance of background statistics, such as the general prevalence of a particular category.¹⁵ In one demonstration of this phenomenon, medical doctors were asked to estimate the likelihood that a patient who had tested positive for a certain rare disease actually had that disease.¹⁶ The doctors were told that the test was 90 percent reliable and that the prevalence of the disease in patients such as the one in the example was one in one thousand. Although the actual likelihood is quite small, 80 percent of the doctors indicated that it was more likely than not that

the patient had the illness. The doctors found the 90 percent reliability statistic compelling, but discounted the importance of the prevalence of the disease.

Psychologists have labeled the specific decision-making problem identified by the aforementioned study as the "inverse fallacy."¹⁷ The inverse fallacy refers to the tendency to treat the probability of a hypothesis given the evidence (for example, the probability that a defendant was negligent given that a plaintiff was injured) as the same as, or close to, the probability of the evidence given the hypothesis (for example, the probability that the plaintiff would be injured if the defendant were negligent).

The inverse fallacy can affect the evaluation of probabilistic evidence in the courts. For example, DNA evi-

12. See Anderson, et. al., *supra* n. 4; Viscusi, *supra* n. 4; Jennings et. al., "Outcome Foreseeability and its Effects on Judicial Decisions" (unpublished manuscript on file with the authors).

13. Hastie, Schkade & Payne, *Juror Judgments in Civil Cases: Hindsight Effects on Judgments of Liability for Punitive Damages*, 23 LAW & HUM. BEHAV. 597, 606 (1999) (24 percent shift); Kamin & Rachlinski, *Ex Post (Does Not Equal) Ex Ante: Determining Liability in Hindsight*, 19 LAW & HUM. BEHAV. 89, 98 (1995) (34 percent shift); Stallard & Worthington, *Reducing the Hindsight Bias: Utilizing Attorney Closing Arguments*, 22 LAW & HUM. BEHAV. 671, 679 (1998) (28 percent shift).

14. Christensen-Szalanski & Willham, *The Hindsight Bias: A Meta-Analysis*, 48 ORGANIZATION BEHAV. & HUM. DECISION PROCESSES 147, 161 (1991).

15. See Kahneman & Tversky, *Subjective Probability: A Judgment of Representativeness*, 3 COGNITIVE PSYCHOL. 430 (1972).

16. Casscells, Schoenberger & Graboy, *Interpretations by Physicians of Clinical Laboratory Results*, 299 NEW ENG. J. MEDICINE 999 (1978).

17. See Koehler, *Why DNA Likelihood Ratios Should Account for Error (Even When A National Research Council Report Says They Should Not)*, 37 JURIMETRICS J. 425, 432 (1997).

dence in a criminal case can provide the probability that a randomly selected DNA sample would match the DNA sample from the crime scene (and it typically states this as a tiny number). Committing the inverse fallacy would mean inferring that the likelihood that the defendant is innocent is equivalent to the likelihood of a random match. This inference, however, would be incorrect, as the probability that the defendant is innocent also depends on the size of the population that the suspect's DNA was drawn from and the reliability of the DNA test.

To test whether judges in our study would commit the inverse fallacy, we gave them a problem based loosely on the classic English case, *Byrne v. Boadle* (1863):

The plaintiff was passing by a warehouse owned by the defendant when he was struck by a barrel, resulting in severe injuries. At the time, the barrel was in the final stages of being hoisted from the ground and loaded into the warehouse. The defendant's employees are not sure how the barrel broke loose and fell, but they agree that either the barrel was negligently secured or the rope was faulty. Government safety inspectors conducted an investigation of the warehouse and determined that in this warehouse: (1) when barrels are negligently secured, there is a 90% chance that they will break loose; (2) when barrels are safely secured, they break loose only 1% of the time; (3) workers negligently secure barrels only 1 in 1,000 times.

We then asked the judges to assess "how likely is it that the barrel that hit the plaintiff fell due to the negligence of one of the workers?" We provided the judges with one of four probability ranges to select: 0-25 percent, 26-50 percent, 51-75 percent, or 76-100 percent.

When presented with a problem like this one, most people commit the inverse fallacy and assume the likelihood that the defendant was negligent is 90 percent, or at least

quite high. In fact, however, the actual probability that the defendant was negligent is only 8.3 percent. We hypothesized that most of the judges would commit the inverse fallacy and select the "76-100 percent" range.

The judges did relatively well on this inverse fallacy problem: 40.9 percent selected the right answer by choosing 0-25 percent; 8.8 percent indicated 26-50 percent; 10.1 percent indicated 51-75 percent; and 40.3 percent indicated 76-100 percent. Although more than 40 percent of the judges analyzed this problem correctly, a comparable percentage chose the 76-100 percent range, suggesting that many of the judges committed the inverse fallacy.

To some extent, judges in this study might have been responding to the underlying *res ipsa loquitur* doctrine that governs cases like the one described in our question. Under the facts as we describe them, the plaintiff makes out a clear case for liability under the doctrine. Because the law dictates that the defendant be liable under these circumstances, the judges might have relied on the doctrine in judging probabilities. This possibility, in fact, highlights one of the more serious difficulties that can arise from judicial reliance on faulty judgments, namely, that legal doctrine might be based on a mistaken inference process. The doctrine of *res ipsa loquitur* instructs judges to take no account of the base-rate of negligence, thereby cementing the inverse fallacy into important legal precedent.¹⁸

In any event, the judges in our study were more attentive than other experts to base-rate statistics. As noted above, 20 percent of a group of doctors—as compared to 40 percent of the judges in our study—provided a correct (or nearly correct) answer to a question using nearly identical probabilities.

Egocentric biases

People tend to make judgments about themselves and their abilities that are "egocentric" or "self-serving."¹⁹ People routinely estimate, for example, that they are above average on a variety of

desirable characteristics, including health, driving, productivity, and the likelihood that their marriage will succeed. Moreover, people overestimate their contribution to joint activities. Following a conversation, for example, both parties will usually estimate that they spoke more than half the time. Similarly, when married couples are asked to estimate the percentage of household tasks they perform, their estimates typically add up to far more than 100 percent.

Egocentric biases are generally psychologically healthy, but they can have an unfortunate influence on the litigation process. Due to egocentric biases, litigants and their lawyers might overestimate their own abilities, the quality of their advocacy, and the relative merits of their cases. These views, in turn, are likely to undermine settlement efforts, as each side remains too optimistic about its chances of winning at trial.

Like litigants and lawyers, judges might also be inclined to interpret information in self-serving or egocentric ways. Egocentric biases might keep judges from maintaining an awareness of their limitations, which could work to the detriment of litigants appearing in their courtrooms. For example, a federal judge can grant an interlocutory appeal only if she is willing to concede that she has issued a ruling on a matter of law "as to which there is substantial ground for difference of opinion."²⁰ Thus, a litigant seeking to persuade a judge to grant an interlocutory appeal must convince her that another judge could easily disagree with her ruling. Egocentric biases may facilitate judicial self-confidence and decisiveness, but they also might induce judges to underestimate the likelihood they will make mistakes when adjudicating and settling cases.

To test whether judges are prone to egocentric biases, we asked those participating in our study to respond to a simple question: "United States magistrate judges are rarely overturned on appeal, but it does occur. If we were to rank all of the magistrate judges currently in this room according to the rate at which their de-

18. Kaye, *Probability Theory Meets Res Ipsa Loquitur*, 77 MICH L. REV. 1456 (1979).

19. See, e.g., Ross & Sicoly, *Egocentric Biases in Availability and Attribution*, 37 J. PERSONALITY & SOC. & SOC. PSYCHOL. 322 (1979) (testing for egocentric biases in joint activities).

20. 28 U.S.C. §1292(b).

Table 3: Summary of effect sizes in our study as compared to other decision makers

Cognitive illusion	Our test for the illusion	Normative expectation	Size of the effect	Compared to others
Anchoring effects	Estimated damages with and without a low anchor	No difference between conditions	Anchor reduced awards by 29%	Comparable
Framing effects	Settlement rates in gains and losses frames	No difference between conditions	Settlement rate 15 percentage points higher in gains frame	Better
Hindsight bias	Percent identifying known outcome as most likely outcome	Total percent of judges identifying known outcome (across 3 conditions) sums to 100%	Percentage identifying known outcome summed to 172%	Comparable
Inverse fallacy	Solution to evidentiary problem	Choosing correct answer	41% chose correct answer	Better
Egocentric bias	Identifying relative rate of being overturned on appeal (in quartiles)	Uniform distribution of answers across four quartiles	56% chose lowest quartile; 88% report being better than the median judge	Comparable

decisions have been overturned during their careers, [what] would your rate be?" We then asked the judges to place themselves into the quartile corresponding to their respective reversal rates: highest (i.e., >75 percent), second-highest (>50 percent), third-highest (>25 percent), or lowest (lowest 25 percent).

The judges exhibited an egocentric bias. Overall, 56.1 percent of the judges reported that their appeal rate placed them in the lowest quartile; 31.6 percent placed themselves in the second-lowest quartile; 7.7 percent in the second-highest quartile, and 4.5 percent in the highest quartile. In other words, nearly 87.7 percent of the judges believed that at least half of their peers had higher reversal rates on appeal. This pattern of results differs significantly from what one would expect if judges were unbiased. Even assuming that the 56.1 percent of the judges in the lowest quartile had never been overturned on appeal (an unlikely possibility, but one that would make their assessments reasonable), the remaining distribution of judges is skewed significantly towards the lower quartiles.

The magnitude of the egocentric bias exhibited by the judges in this study was similar to that reported in

other studies of the bias. Judges in our sample were comparable to automobile drivers (87.5 percent claim to be safer than the average driver), slightly more modest than university faculty (94 percent claim to be better teachers than average), and much more modest than couples about to be married (99 percent claim to be less likely than the average couple to get divorced).²¹

Judges are human

Judges, it seems, are human. They appear to fall prey to the same cognitive illusions that psychologists have identified among lay persons and other professionals. Table 3 summarizes our results and compares them to the results of studies on non-judicial decision makers.

Although the judges in our study were less susceptible to framing effects and the inverse fallacy than other decision makers faced with similar situations, they proved to be just as susceptible as other experts and laypersons to the influence of anchoring effects, the hindsight bias, and the egocentric bias.

Overall, our results indicate that, like the rest of us, judges use heuristics that can produce systematic errors in judgment. Even if judges are free

from prejudice against either litigant, fully understand the relevant law, know all of the relevant facts, and can put their personal politics aside, they might still make systematically erroneous decisions because of the way they—like all human beings—think.

Unlike the rest of us, however, judges' judgments can compromise the quality of justice that the courts deliver. In the law review article from which this article was abstracted, we have identified several things that judges can do to minimize the effects of cognitive illusions, including considering multiple perspectives and seeking out decision-making methods or standards that are less likely to be influenced by misleading heuristics.²² A deeper understanding of how people think, including an appreciation of the power of heuristics, is the first step toward crafting sound solutions. ☛

21. See Svenson, *Are We All Less Risky and More Skillful Than Our Fellow Drivers?* 47 ACTA PSYCHOLOGICA 143, 145-146 (1981) (driving); Cross, *Not Can, But Will College Teaching Be Improved?* 17 NEW DIRECTIONS FOR HIGHER EDUCATION 1, 5-6 (1977) (college professors); and Baker and Emery, *When Every Relationship is Above Average: Perceptions and Expectations of Divorce at the Time of Marriage*, 17 LAW & HUM. BEHAV. 439 (1993) (engaged couples).

22. Guthrie, Rachlinski & Wistrich, *Inside the Judicial Mind*, 86 CORNELL L. REV. 777 (2001).