Heuristics and biases in Judicial Decisions

Eyal Peer & Eyal Gamliel

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Abstract

Three decades of research on judgment and decision-making processes has undermined the classic notion that people are rational decision maker. Instead, it is now held that judgment and decision-making processes, even if done by experts, are affected by simplified heuristics and cognitive shortcuts that, although efficient and adaptive, sometimes lead to systemic and predictable biases. Some of the research in this field examined judges' (and other law experts') decisions and found evidence for the same heuristic thinking processes. In this paper, we review examples in which heuristic thinking leads to biased judgments and biased judicial decisions. We discuss findings that showed how judges make judicial decisions that are affected by heuristic thinking, resulting in occasional biases such as the confirmation bias, hindsight bias, the conjunction fallacy, anchoring-and-adjustment and more.

Key words: heuristic thinking; biases; judgment and decision-making; judges

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Introduction

A famous tale talks about three baseball umpires that are asked how they rule on a ball. One said “I call it like I see it”, the other said “I call it like it is” and the last one (and this is attributed to umpire Bill Klem) said, “It ain’t nothin’ till I call it”. While the first umpire admitted he is an imperfect human observer, the second and third umpires claimed they are infallible and judge cases only based on their objective merits. So, what can be said about court judges? Are court judges such impartial rulers that can “call it like it is” or, as the first umpire humbly confessed, are they limited human observers confined by the boundaries of human cognition?

In this paper, we briefly review some of the accumulating evidence suggesting that in some cases judges might be prone to cognitive fallacies and biases that might affect their judicial decisions. We review several studies on cognitive biases relating to elements of the hearing process (considering evidence and information), ruling or sentencing. These findings suggest that irrelevant factors, that should not affect judicial process, might cause systemic and predictable biases in judges’ decision-making processes in a way that could be explained using known cognitive heuristics and biases.

Heuristics are cognitive shortcuts, or rules-of-thumbs, by which people generate judgments and make decisions without having to consider all the relevant information, but, instead by relying on a limited set of cues that aid them to decide (Tversky & Kahneman, 1974). Such heuristics arise due to the fact that we have limited cognitive and motivational recourses and that we need to use them efficiently in order to reach everyday decisions. Although such heuristics are generally adaptive

and contribute to our daily life, the reliance on a limited part of the relevant information sometimes results in systemic and predictable biases that lead to sub-optimal decisions. Tversky and Kahneman (who won an economics Nobel Prize for his joint work with late Amos Tversky) introduced the Heuristics and Biases approach by first identifying key heuristics and the biases they sometimes cause. For example, the Availability heuristic is the one by which we judge the probability of an event based on how easy it is to recall instances of such an event. Try to think, for example, of words that start with the letter "r" compared to words that have "r" as the third letter. Although the latter is more frequent in English, people think there are more words that start with "r", simply because they are easier to recall (Tversky & Kahneman, 1974).

In the following, we will review evidence on the use of heuristics and biases among court judges (as well as other professional law experts) that affects judgment and decision-making process in the courtroom. Before we begin, we would like to note two related topics that are not addressed in this paper. The first one concerns the vast literature about social biases such as racial bias or gender bias that are sometimes found in trials. Although this is a very important issue, much has already been said (and done) about it and it is, as the reader will notice, very different from the cognitive biases we describe in this paper. Second, much research has focused on biases among jurors' decisions making. Although we sometimes mention jurors in the following pages, we decided to generally exclude such research from the current review because we would like to focus on how professional judges (and sometimes lawyers) might be prone to cognitive biases, despite their experience and expertise. In the next sections we review evidence for cognitive and judgmental biases that pertain to the hearing process, the ruling process and the sentencing process.

Biases in the hearing process

During a trial, judges are presented with evidence; they may ask for more or other evidence, they may judge evidence as inadmissible, or they may decide to give more (or less) weight to certain pieces of evidence. Such tasks in the hearing process might be affected by several cognitive biases including the confirmation bias, the hindsight bias or the conjunction fallacy.

Confirmation Bias

If people have a preconception or hypothesis about a given issue, they tend to favor information that corresponds with their prior beliefs and disregard evidence pointing to the contrary. This confirmation bias makes people search, code and interpret information in a manner consistent with their assumptions, leading them to biased judgments and decisions (Plous, 1993). For example, in a classic study at Stanford University, participants who were either for or against capital punishment read about studies that either supported or challenged capital punishment. It was shown that participants favored studies that followed their prior attitudes: those who were in favor of capital punishment agreed more with studies that confirmed their position and rated those as better and more convincing while those who were against capital punishment favored the studies that rose against it (Lord, Ross, & Lepper, 1979).

Confirmation bias can also affect judges when they hear and evaluate evidence brought before them in court. Specifically, judges might be biased in favor of a decision that confirms their prior hypothesis and disregard evidence that does not correspond with their previous assumptions. Indeed, several studies have pointed to the occurrence on this bias among judges, lawyers or policemen. For example, Rassin (2010) presented these groups of experts with a murder case in which the victim was a

female psychiatrist and the prime suspect was the wife of one of her patients. The wife was accused of killing the psychiatrist, allegedly out of jealousy. Participants were asked to review 20 pieces of information and rate the degree these incriminate or exonerate the prime suspect. However, half of the participants were also told about the possibility of another suspect: a former male patient of the psychiatrist who has been harassing her for a long time. Surprisingly, all participants rated the pieces of evidence similarly and all thought the prime suspect was guilty in the same degree. Thus, it seems that judges, lawyers and policemen failed to consider the alternative scenario. Evidence was considered only if it helped them confirm the prior belief of the guilty of the prime suspect and disregarded if it pointed to a different suspect.

Hindsight Bias

When people evaluate events or outcomes after they occurred, they sometimes exhibit a hindsight bias when they judge the event as more predictable then it was before it actually happened. This "we knew it all along" phenomenon has been shown to occur in many areas such as history, medicine, finances and the law, among others (Fischoff, 2007). In the basic experiment, participants are given a set of possible outcomes and are told which one of them is true and are asked to assess the probability of each outcome. Although different participants are told that different outcomes are true, all assign higher probabilities to the outcome told to be true, no matter what it is (Fischoff & Beyth, 1975). In general, the hindsight bias refers to the inequality between foresight and hindsight: although events are less predictable before than after they actually happened, people cannot ignore information about whether an event has happened or not, and assign it higher probability in the former case.

Hindsight bias has been shown to occur in the courtroom as well, mainly in liability cases (for a review, see Harley, 2007). In such cases, the task of the judges or

jurors is to assess how foreseeable an outcome was and to evaluate whether the plaintiff's behavior took this risk into consideration. The problem is that judges evaluate the outcome in afterthought while the plaintiff only had the chance to provide foresight about it. For example, in one case a physician was accused of malpractice because he failed to detect a tiny tumor in an early chest radiography. The tumor got bigger and the patient died as a result, leading to the malpractice claim. The physician was found guilty after another radiologist – who saw the radiographs after the tumor was found – testified that the tumor could have been detected in the early radiography (Berlin, 2000). Clearly, the second radiologist had the benefit of knowing the tumor was actually there, an advantage the first physician did not have at the time. In addition, studies have found that the severity of the outcome increases hindsight bias dramatically. For example, judges who were informed that a psychiatric patient became violent were more likely to find the patient's therapist negligent than those who did not receive information about the outcome and its severity (LaBine & LaBine, 1996).

Conjunction Fallacy

Another type of judgmental bias relates to how people judge the probability of events based on how detailed these events are described. In particular, it has been found that more detailed descriptions of an event can give rise to higher judged probabilities (e.g., Tversky & Kahneman, 1982). This bias has been termed the conjunction fallacy because it shows that people erroneously believe that events that are more described are more probable than those that are described in less detail. According to classic probability theory, less detailed events actually contain various instances of more detailed events and thus cannot be less probable than any of the contained events. For example, just as the probability of an object being a fruit cannot

be smaller than the probability it is an apple, so that the probability of a suspect being convicted of a crime cannot be smaller than the probability that he will be convicted of burglary.

However, one study (Fox & Birke, 2002) showed that expert attorneys actually committed this conjunction fallacy when asked to evaluate the chances of a specific case (Jones vs. Clinton) to be disposed by a judicial verdict or an outcome rather than a judicial verdict. When attorneys were asked to evaluate the probabilities of different types of outcomes that are not a judicial verdict (such as a settlement, dismissal, withdrawal, etc,), they assigned much higher probabilities to all of the outcomes that are not judicial verdict (and sometimes even higher than 1) than the general probability of the case being disposed by an outcome that is "not a judicial verdict" (Fox & Birke, 2002). Although no studies have examined this conjunction fallacy among judges, research on other biases among judges (such as that reviewed in this paper) leads to predict that judges might be prone to this bias as well.

Biases in the ruling process

The biases described in the previous section related to the hearing process but also involved effects on the outcome of the trial and the judges' ruling process. In the next section we review more examples of different biases that affect judges' ruling process. These include the inability to ignore inadmissible evidence and biases in decisions of sequential ruling.

Inability to ignore inadmissible evidence

Some evidence that is presented in trial can be deemed as inadmissible because it was obtained illegally, is considered hearsay, is highly prejudicial or for some other reason. When inadmissible evidence is wrongfully presented in jury trials, judges may instruct juries to disregard or ignore the evidence. However, many studies

have shown that jurors' ability to not consider inadmissible evidence is questionable at best. For example, Doob and Kirshenbaum (1973) showed that mock jurors were more likely to rate the defendant as guilty when they were exposed to prior criminal record information than when no record information was given, even when judicial instructions were that prior record information should be used only to determine credibility, rather than as an indicator of guilt. Other studies showed similar findings as jurors' decisions seemed unaffected by instructions to disregard or ignore inadmissible evidence (for a review, see Lieberman & Arndt, 2000).

That jurors, who are inexperienced laymen, cannot ignore inadmissible evidence is not as surprising as is the fact that some judges could not do so as well. As one study showed (Landsman & Rakos, 1994), experienced judges were not different from inexperienced jurors in reacting to inadmissible evidence. In this study, both groups read about a product liability case including (or not including) biasing material and were either instructed (or not) do disregard this piece of inadmissible evidence. Both jurors' and judges' verdicts depended heavily on whether the biasing material was included or not, but these decisions were not altered if that evidence was deemed as inadmissible or not. Thus, is seems that judges, as jurors, cannot easily disregard inadmissible evidence, although they know they should.

Biased decisions in sequential ruling

When judges make repeated sequential ruling, they tend to rule more in favor of the status quo over time, and they overcome this tendency by taking a food break (Danziger et al., 2011). In their study, Danziger et al. (2011) examined 1112 judicial ruling by eight judges over 50 days in a 10 months period, all ruling regarded parole requests. The study showed that about 65% of the rulings were in favor of the plaintiff at the beginning of each session (in the morning, after breakfast break and after lunch

break), and they gradually decreased to 0-10% at the end of each session. As there were no other explanations for this effect (the plaintiff's characteristic background, the nature of the request and other potential factors did not vary in a consistent manner within each session), it seems that the repeated ruling depleted the judges' mental resources. Such depletion characterizes other procedures in other occupations, and also laymen experience when they encounter a repeated task. The judges obviously are unaware of this tendency otherwise they would try and overcome it.

Biases in the sentencing process

The next, and final, group of biases we review here relate to the process of sentencing, or awarding punishment to the convicted party. First, we review a comprehensive study that modeled sentencing decision-making by comparing normative to heuristic models. Second, we discuss a prevalent bias in sentencing that stems from the anchoring-and-adjustment heuristic.

Modeling sentencing decisions

In the beginning of the paper we posed the question of whether judges are rational decision makers who contemplate every relevant aspect in the optimal manner or are they sometimes satisfied with using simpler heuristics. One study that tried to answer this question, regarding sentencing decisions, examined several possible normative and heuristic cognitive models trying to evaluate which model better describe the judicial decisions and magnitude of the sentence of trials on theft, forgery and fraud in a German court (von Helversen & Rieskamp, 2009). The results showed that with respect to relatively minor offences, prosecutors and judges considered only a limited number of factors, while neglecting other legally relevant and highly important ones. The discrepancies between the number of factors that should be considered and the number of those actually considered, according to the

decision analysis, were higher when the offense characteristics were less serious; for more serious offenses, the discrepancies found were smaller. Examining both judges and prosecutors in the context of sentencing is important due to the high frequency of plea-bargaining, at least in US courts (von Helversen and Rieskamp, 2009). For example, although judges and prosecutors indicate that they base their sentencing on the relevant and important factors of presence of a confession or prior record, the analysis revealed that these factors were neglected. Others relevant and legally important factors indeed affected the sentencing while possible factors that should not affect the sentencing (e.g., race, sex, nationality), were indeed found not to affect it. von Helversen and Rieskamp (2009) indicated that the neglected factors could be explained by cognitive constraints but also by time limitations under which sentencing decision are made.

Anchoring-and-adjustment

Anchoring-and-adjustment refers to the process of assimilation of a numeric estimate towards a previously considered standard. In their classic anchoring study, Tversky and Kahneman (1974) introduced participants with comparative and absolute consecutive questions – about the percentage of African nations in the United Nations. In the comparative question, participants indicated whether the percentage of African nations in the United Nations was higher or lower than an arbitrary number (the anchor): either 65 or 10 (the alleged result of spinning a roulette wheel). Then, participants were asked an absolute question regarding their best estimate of this percentage. Absolute judgments were assimilated to the provided anchor value, so that the mean estimate of African nations in the UN among participants who received the high anchor was 45%, compared to 25% for participants receiving the low anchor.

Since Tversky and Kahneman's (1974) classic study, the effect of anchoring-and-adjustment was demonstrated in various domains of judgment and decision-making and was proved to be a strong, robust, reliable and persistent psychological effect (e.g., Mussweiler, 2002; Strack & Mussweiler, 1997; Wilson, Houston, Etling, & Brekke, 1996). Several theoretical explanations have been offered for the mechanism through which the anchor affects the numerical estimation or prediction: people integrate the anchor to the answer and adjust from it insufficiently (Tversky & Kahneman, 1974); adjusting estimates until an acceptable value is found, however the adjustment is usually insufficient because it arrives at the nearest upper or lower boundary of a large range of acceptable values (Jacowitz & Kahneman, 1995); selective accessibility model in which comparing a target to an anchor leads to a biased search strategy consistent with positive hypothesis testing: presented with a low anchor, people will retrieve information consistent with the hypothesis that the estimate is small, and vice versa (Strack & Mussweiler, 1997).

As can be expected, judges have also been found to be affected by anchors in their judicial decisions. As criminal sentencing decisions pertain to numeric quantities, they are also affected by numeric anchors, whether they are minimal sentences that the law presents, a sentence demanded by a prosecutor (Enough & Mussweiler, 2001), attorney, or recommended by a probation officer (Ebbesen & Konecni, 1981). For example, anchoring affected both novice and experienced judges when presented with two different demands for sentence by alleged prosecutor on a hypothetical rape case – 12 months or 34 months (Enough & Mussweiler, 2001). Anchoring affected the ruling sentence even when the judges declared that the anchor was not relevant to their decision. Enough and Mussweiler (2001) suggested that the anchor affected the ruling of the judges because of selective increase in the

accessibility of anchor-consistent knowledge: given an anchor of a relatively severe punishment (34 months in the above study), the judges retrieved more information that was consistent with this sentence, that is, evidence and details that were consistent with more severe punishment. In contrast, given the more lenient punishment (12 months in the study), the judges retrieved more information that was consistent with this sentence, that is, evidence and details that were consistent with less severe punishment. As a result, the ruling of the judges were affected by the given anchor, whether it was more relevant and informative, or less so.

On a follow up study, Englich et al., (2006) showed similar anchoring effect even when the anchor was set not by the prosecutor, a potentially relevant source, but rather by a journalist, which is an irrelevant source, as the media should not affect judicial decisions. Englich et al. (2006) compared the effect of anchoring on judges who were experts in criminal law vs. others who were not, to find similar effects for the two groups. These findings are consistent with those of Northcraft and Neale (1987) and Mussweiler et al. (2000) who found that the judgments of experts are also susceptible to the effect of anchoring.

Conclusions

In this paper, we summarized research that demonstrated how heuristic thinking is involved in judicial decision-making. Although heuristic thinking is typically efficient, it might cause biases at times (Tversky & Kahneman, 1974). Heuristic thinking was demonstrated in various contexts of the hearing process, the ruling process, and the sentencing process. The hearing process may be affected by hindsight bias, confirmation bias, or the conjunction fallacy. Heuristic thinking also characterizes some of the ruling process that might be biased because of judges' inability to ignore inadmissible evidence and biased decisions in sequential ruling;

Heuristic thinking might also affect the sentencing process, due to a tenancy to rely on limited number of factors, and because of the dominance effect of anchoring. Thus, research suggests that judges, prosecutors and other legally related professionals, use heuristic thinking in judicial processes and decisions, although not all of them are aware of such use. Obviously, awareness to the heuristic thinking and the resulting possible biases caused in judicial decisions is a pre-requisite for any future attempt to limit these biases. We hope that this paper would be a small step towards that goal.

References

Berlin, L. (2000). Hindsight bias. *American Journal of Roentgenology, 175*(3), 597–601.

Danziger, S., Levav, J., & Avnaim-Pesso, L. (2011). Extraneous factors in judicial decisions. *Proceedings of the National Academy of Sciences, 108*(17), 6889-6892.

Doob, A. N., & Kirshenbaum, H. M. (1973). Some empirical evidence on the effect of S.12 of the Canada evidence act upon an accused. *The Criminal Law Quarterly, 15,*88-96.

Ebbesen, E. B., & Konecni, V. J. (1981). The process of sentencing adult felons. In B. D. Sales (Ed.). *The trial process* (pp. 413-458). New York, NY: Plenum.

Englich, B., Mussweiler, T., & Strack, F. (2006). Playing dice with criminal sentences: The influence of irrelevant anchors on experts' judicial decision making. *Personality and Social Psychology Bulletin, 32*(2), 188-200.

Enough, B., & Mussweiler, T. (2001). Sentencing under uncertainty: Anchoring effects in the Courtroom. *Journal of Applied Social Psychology, 31*(7), 1535-1551.

Fischoff, B. (2007). An early history of hindsight research. *Social cognition, 25*, 10-13

Fischoff, B., and Beyth, R. (1975). "I knew it would happen" Remembered probabilities of once-future things. *Organizational Behaviour and Human Performance, 13*, 1-16

Fox, C.R., Birke, R. (2002). Forecasting trial outcomes: Lawyers assign higher probability to possibilities that are described in greater detail. *Law and Human Behavior, 26*(2), 159-173.

Harley, E.M. (2007). Hindsight bias in legal decision making. *Social Cognition, 25*(1), 48-63.

Jacowitz, K. E., & Kahneman, D. (1995). Measures of anchoring in estimation tasks. *Personality and Social Psychology Bulletin, 21*(11), 1161-1166.

LaBine, S. J., & LaBine, G. (1996). Determinations of negligence and the hindsight bias. *Law and Human Behavior, 20*, 501–516.

Landsman, S., & Rakos, R.F. (1994). A preliminary inquiry into the effect of potentially biasing information on judges and jurors in civil litigation. *Behavioral Sciences and the Law, 12*, 113-126.

Lieberman, J.D., Arndt, J. (2000). Understanding the limits of limiting instructions. *Psychology, Public Policy, and Law, 6*(3), 677-711.

Lord, C.G., Ross, L., Lepper, M.R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, *37*(11), 2098–2109.

Mussweiler, T. (2002). The malleability of anchoring effects. *Experimental Psychology, 49*(1), 67-72.

Mussweiler, T., Strack, F., & Pfeiffer, T. (2000). Overcoming the inevitable anchoring effect: Considering the opposite compensates for selective accessibility. *Personality and Social Psychology Bulletin, 26*(9), 1142-1150.

Northcraft, G. B., & Neale, M. A. (1987). Experts, amateurs, and real estate: An anchoring-and-adjustment perspective on property pricing decisions. *Organizational Behavior and Human Decision Processes, 39*(1), 84-97.

Plous, S. (1993). *The Psychology of Judgment and Decision Making*, McGraw-Hill,

Rassin, E., EErland, A., & Kuijpers, I. (2010). Let's find evidence: An analogue study of confirmation bias in criminal investigations. *Journal of Investigative Psychology and Offender Profiling, 7*, 231–246

Strack, F., & Mussweiler, T. (1997). Explaining the enigmatic anchoring effect: Mechanisms of selective accessibility. *Journal of Personality and Social Psychology, 73*(3), 437-446.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124-1131.

von Helversen, B., & Rieskamp, J. (2009). Predicting sentencing for low-level crimes: Comparing models of human judgment. *Journal of Experimental Psychology: Applied, 15*(4), 375-395.

Wilson, T. D., Houston, C. E., Etling, K. M., & Brekke, N. (1996). A new look at anchoring effects: Basic anchoring and its antecedents. *Journal of Experimental Psychology: General, 125*(4), 387-402.