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Narrative Review Article

Cognitive Biases, Judicial Discretion, and Ethical Imperatives in Criminal Adjudication across Legal Systems

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Abstract

Introduction: Criminal adjudication, as one of the most complex domains of justice, lies at the intersection of human cognition, ethical obligations, and legal norms. In recent decades, interdisciplinary studies in cognitive psychology and moral philosophy have demonstrated that judicial judgment is not merely a logical and impartial process; rather, it is influenced by a range of mental biases, social contexts, and institutional pressures. Moreover, the extensive discretion exercised by judges in interpreting the law and determining punishment can, if applied without ethical guidance and cognitive self-awareness, divert justice from its intended path. Comparative analyses of various legal systems reveal that the methods for constraining biases, regulating discretion, and strengthening professional ethics depend heavily on the institutional structure and legal culture of each country.

Material and Methods: This paper employs a descriptive-analytical approach to explore the topic. Based on the extracted information from articles and resource books, discussion of the article is written by authors and conclusion is exactly written based on discussion.

Conclusion: The present study shows that achieving criminal justice requires the interweaving of three foundational dimensions: cognition, law, and ethics. Law provides the external framework of justice; ethics gives it internal meaning; and cognition reveals the limitations and possibilities of the human mind in this process. Successful legal systems often attain a dynamic balance between discretion and impartiality through a combination of cognitive training, codified ethical standards, and institutional transparency. Thus, justice in adjudication is not the result of eliminating biases but of managing them intelligently through moral conscience and structural design.

Keywords: Criminal Adjudication, Cognitive Bias, Ethical Obligations, Judicial Discretion

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INTRODUCTION

The process of criminal adjudication, as a fundamental pillar of the criminal justice system, plays a crucial role not only in determining the fate of defendants and victims but also in reflecting the level of legal, moral, and human maturity of a society. Criminal adjudication has long been a meeting ground for diverse forms of knowledge - where law, psychology, moral philosophy, sociology, and even neuroscience converge to enhance our understanding of justice and human behavior (1). Within this context, three key components - cognitive biases, judicial discretion, and ethical imperatives - are recognized as determining factors in how criminal justice is shaped and realized. An

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interdisciplinary examination of these domains allows the decision-making processes of judges and other actors within the criminal justice system to be assessed not only from a legal standpoint but also from psychological and ethical perspectives.

From the standpoint of cognitive psychology, human decision-making is a complex and error-prone process. Judges, prosecutors, and even jurors, although ostensibly guided by law and evidence, are influenced by a series of cognitive biases, including confirmation bias, anchoring, availability, and biases related to emotion or the reputation of the defendant (2). These biases may lead a judge, instead of impartially evaluating evidence, to subconsciously emphasize information that confirms an initial assumption. Numerous studies have shown that even experienced judges are systematically susceptible to such biases when assessing sentences or the likelihood of criminal behavior (3). Thus, criminal justice cannot be analyzed solely within the framework of legal norms; it must also be understood as a cognitive and social process.

On the other hand, judicial discretion is another major determinant of criminal adjudication. In every legal system, a judge has a certain degree of freedom and discretion in interpreting the law and applying it to the facts of a case. Although this discretion is essential for the flexibility of the justice system, it may also result in significant disparities in judicial outcomes. In common law jurisdictions such as the United States and the United Kingdom, judicial discretion is defined more broadly because judicial precedents and interpretive principles play a central role (4). In contrast, in civil law systems such as France and Germany, the legal structure is more rigid, and judges are required to adhere to the explicit text of the law, although they still retain limited discretion at the level of interpretation (5). This diversity in discretionary structures has major implications for criminal justice, since the degree of judicial independence in decision-making can both guarantee individualized justice and, through cognitive biases, potentially open the door to unintended injustices.

In connection with the two preceding components, ethical obligations constitute yet another vital dimension of criminal adjudication. Judicial ethics not only governs judges' conduct in the courtroom but also influences their processes of thought, analysis, and judgment. Moral philosophy - from Aristotle to Kant and extending to contemporary theories of justice such as Rawlsian perspectives - has long sought to answer how justice should be implemented so as to be not only lawful but also fair (5). In criminal adjudication, ethical obligations require judges to adhere to fairness, impartiality, confidentiality, and respect for the human dignity of both defendant and victim. The central challenge lies in balancing the "legal duty" and the "moral duty," as strict adherence to the law may at times conflict with a judge's moral intuition (6). Judicial ethics thus functions as a restraint against cognitive biases and deviations arising from discretionary authority.

Interdisciplinary studies of the relationships among cognitive bias, judicial discretion, and judicial ethics have gained increasing prominence in recent decades with the expansion of research in legal psychology and applied moral philosophy. A movement known as "psychology and law," emerging in the late twentieth century especially in the United States, sought to analyze judicial decisions through the lens of empirical psychology (7). Findings from this field revealed that judges are subconsciously influenced by non-legal variables when assessing witness credibility, evaluating motivations, or selecting sentences. These findings led to the introduction of "judicial cognitive self-awareness" and training in bias control within legal education (8).

Different legal systems place varying degrees of emphasis on these interdisciplinary aspects. In

the United States, initiatives such as the "Judicial Decision-Making Project" and "Implicit Bias Training for Judges" have been developed specifically to mitigate the effects of unconscious biases (9). By contrast, European legal systems have tended to adopt more philosophical and ethics-oriented approaches; for example, in France, judicial ethics is an integral part of official judicial training, and principles such as présomption d'innocence (presumption of innocence) or impartialité (impartiality) are regarded not only as legal norms but also as ethical imperatives (10). In German law, emphasis on Verhältnismäßigkeit (proportionality) reflects an approach that links law, ethics, and judicial rationality (11).

Comparative analysis also shows that the type of adjudicatory system - adversarial or inquisitorial - affects both the intensity of cognitive biases and the mode of judicial discretion. In adversarial systems such as the United States, where the parties play an active role and the judge serves as an impartial observer, cognitive biases may manifest more prominently at the level of the jury or attorneys (12). However, in inquisitorial systems like France or Germany, in which the judge is responsible for gathering evidence, the risk of cognitive biases directly affecting the adjudicative process is heightened - thus increasing the importance of regulatory and ethical safeguards (13).

Given the significance of this issue, many contemporary theorists argue that the realization of genuine justice depends on the simultaneous understanding of cognitive, legal, and ethical dimensions. The theory of the "reasonable judge," articulated in the works of legal philosophers such as H. L. A. Hart and Ronald Dworkin, rests precisely on the notion that a judge must be aware not only of legal rules but also of the moral and psychological logic underlying decisions (14, 15). From this perspective, judicial decision-making is not merely a logical act but a synthesis of cognition, value, and will.

Furthermore, the development of new technologies and artificial intelligence in the realm of electronic adjudication has raised new questions about the role of cognitive biases and judicial discretion. Can algorithmic decision-making replace the human judge? Recent studies indicate that although algorithms may reduce human error, they are themselves susceptible to "algorithmic bias," as their training data often reflect social and historical inequities (16). Consequently, ethical guidelines must also evolve in this domain to ensure that technology remains a servant of human justice rather than its master (17).

Ultimately, interdisciplinary analysis of criminal adjudication reminds us that justice is a multifaceted concept. Justice is not merely the enforcement of law but the realization of truth and fairness within a social and human context. In this process, the judge - as a human being with cognitive limitations - bears a dual responsibility: first, to recognize internal biases; and second, to exercise discretion within the boundaries of professional ethics. Ethics and cognition thus function as complementary forces that, when properly understood and applied, can give criminal justice a more humane and rational character.

Accordingly, the present study seeks to examine, through an interdisciplinary approach, the conceptual and practical interconnections among cognitive biases, judicial discretion, and ethical obligations across different systems of criminal adjudication. This examination is significant not only at the theoretical level but also for judicial policymaking, judicial education, and the design of more equitable adjudicatory systems. In the twenty-first century, criminal justice more than ever requires a deep understanding of the human mind, human morality, and institutional structures in order to remain a locus of public

trust amid complex social and technological challenges.

MATERIAL AND METHODS

This paper employs a descriptive-analytical approach to explore the topic. Based on the extracted information from articles and resource books, discussion of the article is written by authors and conclusion is exactly written based on discussion.

DISCUSSION

The Triadic Interaction of Cognition, Law, and Ethics in Criminal Adjudication

Criminal adjudication is, in essence, the intersection of three fundamental domains: human cognition, positive law, and professional ethics. None of these domains alone can guarantee justice; rather, judicial justice is realized only when these three dimensions remain in sustained and balanced interaction with one another. Law, as the formal and binding structure of the social order, provides the framework within which conduct is assessed according to defined rules; cognition, as the mental capacity of decision-makers, is the means by which these rules are understood and interpreted; and ethics is the normative and human element that elevates decision-making from a merely mechanical function to the level of responsible judgment (6, 18).

At the first level, human cognition as the foundation of judicial decision-making plays a decisive role in the quality of adjudication. Studies in cognitive psychology have shown that humans - including judges - are constantly exposed to cognitive biases when analyzing evidence and interpreting facts, such as confirmation bias, anchoring bias, and the availability heuristic (2). These biases may steer a judge toward conclusions that reflect personal beliefs and mental presuppositions rather than the objective evidence in the case (3). For this reason, cognition without ethical guidance and legal constraints may lead to deviations from justice. From this perspective, human cognition in criminal adjudication should be understood not merely as the capacity for logical reasoning, but as a self-aware process attuned to mental errors (8).

At the second level, law as a set of binding norms defines the formal framework for decision-making. The law seeks to reduce personal discretion and individual bias by defining concepts such as crime, responsibility, and punishment, and thus enforces justice in a structured manner (15). However, the law itself is a product of human interpretation and cannot be detached from the cognitive and ethical background of decision-makers. As Dworkin argues (14), law is not merely a set of rules but a living interpretation of the moral principles of society. Accordingly, in criminal adjudication, the law both empowers and constrains the judge: it grants the authority to interpret justly, while restricting arbitrariness.

At the third level, ethics plays a supervisory and guiding role. Judicial ethics not only encompasses professional values such as impartiality, fairness, and transparency, but also serves as an internal mechanism that restrains the cognitive and legal authority of the judge. In the absence of ethics, law can become a cold and mechanical instrument, and human cognition can become a source of arrogance or prejudgment (10). Thus, ethics in criminal adjudication operates like a compass that protects the decision-maker from the dangers of power and prejudice (4). Practically speaking, ethics is the reflection of the human conscience within the judicial system, emphasizing a commitment to truth, respect for human dignity, and recognition of cognitive limitations (11).

The interaction of these three domains is complex and dynamic in practice. For example, when a judge confronts a case in which the legal evidence

is ambiguous, cognition and ethics join the law to guide a decision that is not only consistent with the letter of the law but also just and humane. In such situations, the judge must strike a balance between legal rationality and moral sensitivity - a balance that requires cognitive self-awareness and ethical commitment (12). In other words, cognition without ethics may lead to cold and unjust calculation; law without cognition results in blind rigidity; and ethics without law risks dangerous relativism. Only through dialogue among these three domains does criminal justice attain its full meaning.

Comparative studies across legal systems have shown that the balance among these three domains differs in each system. In common law systems, reliance on precedent and case-based reasoning gives greater weight to judicial cognition and discretion, whereas civil law systems, which emphasize codified statutes, seek to minimize the influence of subjective factors (5). Nevertheless, in recent decades, both systems have come to recognize the importance of ethical and cognitive imperatives in adjudication. For instance, in the United States, training in "awareness of implicit bias" has become mandatory for judges (9), while in France and Germany, ethical principles such as impartiality and proportionality have been formally integrated into judicial education (10, 11).

From a theoretical perspective, the interaction of cognition, law, and ethics in criminal adjudication constitutes a "normative triad," in which each element plays a distinct yet complementary role: law is the external criterion of justice, cognition is its internal mechanism, and ethics is the guarantor of their integration. If these three elements are in conflict, justice is weakened; but if they operate in harmony, justice is achieved not only legally but also humanely (14, 18). From this standpoint, true justice is the product of balance among reason, emotion, and normativity.

Moreover, this triadic interaction must be redefined in light of contemporary developments. The emergence of artificial intelligence in judicial processes poses a significant challenge to this balance. On the one hand, algorithms used to predict recidivism or suggest sentencing can improve accuracy; on the other hand, there is a risk that the moral element and the human conscience may be lost in machine-based decisions (16, 17). Thus, even in the age of technology, the need for human ethics and cognitive oversight of automated decisions is more pressing than ever; otherwise, justice may devolve into a statistical process devoid of human spirit.

Ultimately, criminal justice is truly realized when the judge can cultivate harmony among cognition, law, and ethics within themselves. This harmony is not a natural state but the product of training, experience, and continuous reflection. As Rawls states (18), justice is fair only when individuals make decisions that remain equitable even behind a veil of ignorance regarding their social position. This insight can be applied to adjudication: a just judge is one who, through the veil of cognitive biases and legal pressures, reaches a decision that satisfies both moral conscience and rational criteria. Thus, the triadic interaction of cognition, law, and ethics is not merely a philosophical theory but a practical foundation for ensuring justice in criminal adjudication.

Cognitive Biases in Judicial Decision-Making: From Theory to Practice

Judicial decision-making, although outwardly perceived as a logical, reasoned, and rule-based process, is in reality a reflection of the complexities of the human mind. A judge, being human, can never be fully insulated from the influence of emotions, assumptions, and unconscious cognitive patterns. Cognitive psychology research in recent decades has shown

that humans, when processing information and making judgments, often rely on mental shortcuts or heuristics—shortcuts that are efficient in many situations but can lead to systematic and unjust biases in judicial decisions (2, 19).

The first of these biases is confirmation bias. Here, once a judge forms an initial hypothesis regarding the guilt or innocence of a defendant, they subconsciously tend to seek and evaluate information that confirms this hypothesis while ignoring contradictory evidence (1). For example, if early in the adjudicatory process a police report identifies a suspect as the primary offender, the judge or prosecutor may unconsciously interpret subsequent evidence within this same framework. This phenomenon allows early investigative errors to persist through the sentencing stage, increasing the likelihood of judicial error (20).

Anchoring bias is another common cognitive error observed in judicial decision-making. In this bias, the first piece of information or proposal presented in a case - such as the prosecutor's suggested sentence or the amount of damage claimed - acts as a "mental anchor" that influences the judge's final assessment (21). Even if a judge strives to decide impartially, the unconscious effect of the initial anchor typically causes the final sentence to gravitate toward that initial figure. These findings demonstrate that judicial decisions, contrary to traditional assumptions, are not solely guided by legal logic but are also shaped by psychological context and the manner in which information is presented (8).

Other biases, such as availability bias, also play a significant role. This bias occurs when a judge assesses the likelihood of an event or the credibility of a claim based on how easily similar examples come to mind (12). For instance, following extensive media coverage of a particular crime, a judge may unconsciously overestimate the probability of its recurrence. As a result, sentencing or preventive measures may become harsher than warranted. This effect is especially pronounced in societies where media discourse significantly shapes public perception (7).

In addition, emotional bias can influence judicial evaluation. A judge facing a victim or defendant may subconsciously react to their appearance, social background, or cultural characteristics (22). A defendant's demeanor, tone of voice, or a victim's emotional display may sway judicial judgment - even when such factors have no direct legal relevance. Thus, the humanity of the judge, though valuable and necessary, can become a source of unintended injustice in the absence of cognitive self-awareness.

Theoretically, the persistence of cognitive biases raises a fundamental question: can one truly believe in complete judicial impartiality? Legal philosophers such as Dworkin (14) argue that the judge, in the role of "Hercules," must always rely on principles of justice and rationality and transcend personal limitations. However, empirical psychology challenges this idealistic view, demonstrating that even experienced judges cannot fully evade their mental patterns (3). This reality necessitates a reconceptualization of judicial impartiality - not as an absolute state but as a dynamic and self-critical process.

Practically, legal systems have adopted various strategies to mitigate cognitive bias. In the United States and Canada, specialized training programs for judges teach topics such as decision-making psychology and unconscious bias (9). The aim is to develop "cognitive self-awareness" so that judges can recognize and control biases at the moment of decision-making. In European countries such as Germany and the Netherlands, efforts have been made to reduce individual cognitive errors through ethical guidelines and increased collective decision-making (5, 11).

However, the core challenge is that cognitive biases are unconscious in nature, and mere awareness of their existence is insufficient. Research shows that even after formal training, judges remain susceptible to similar cognitive effects because such biases are rooted in fundamental structures of the human mind (23). Therefore, more effective solutions may lie in institutional design and procedural reform rather than solely in individual correction. For instance, multi-judge panels, collaborative deliberation, transparency in judicial reasoning, and mandatory documentation of decision logic can help reduce the impact of individual biases (8).

Within this context, judicial ethics serves as an important shield against bias. Ethical principles such as fairness, epistemic humility, and commitment to truth remind judges that a decision, though legally sound, may still be cognitively flawed (6, 10). Ethics, particularly in the form of professional self-discipline, requires judges to remain mindful of the possibility of error and to avoid hasty judgments. In other words, ethics is the "software system" of justice that keeps cognition and law on the right path.

Additionally, technological advancements and the rise of artificial intelligence in adjudication have introduced new concerns about cognitive bias. Judicial algorithms designed to predict recidivism or suggest sentences, though seemingly neutral, often reproduce historical and social biases because they are trained on biased data (16). Thus, replacing human judges with machines does not eliminate bias but instead reproduces it in a more opaque form. For this reason, genuine justice requires a combination of human self-awareness and ethical oversight over technological processes (17).

Overall, the examination of cognitive biases in judicial decision-making demonstrates that justice, if entrusted solely to law, remains incomplete. Justice is a human process in which cognition, law, and ethics must operate simultaneously. A just judge is one who is aware of their cognitive limitations, adheres to ethical principles, and interprets the law not as a rigid text but as a tool for realizing humanity. Awareness of cognitive biases is thus the first step toward cognitive justice—justice rooted in self-knowledge and recognition of human fallibility.

Judicial Discretion and the Challenge of Balancing Law and Equity

Judicial discretion is one of the most fundamental and, at the same time, controversial concepts in the philosophy of law and criminal procedure. This concept allows the judge, within a defined scope, to decide on the basis of personal interpretation of the law, the circumstances of the case, and ethical or social considerations. On the one hand, judicial discretion provides a guarantee for flexibility and humanity within the legal system; on the other hand, in the absence of oversight or clear ethical principles, it may lead to instability, discrimination, or the emergence of cognitive biases in the adjudicative process (14, 24).

In different legal systems, the relationship between law and judicial discretion is configured in varying ways. In common-law systems, particularly in England and the United States, the judge plays an active role in interpreting the law and shaping judicial precedent. Prior case law and the principles of equity serve as the basis for decision-making, allowing judges to rule - with reference to case-specific justice - when no explicit statutory guidance exists (15). In contrast, civil-law systems, such as France and Germany, place stronger emphasis on statutory text and expect judges to act as "implementers of the law," rather than its "creative interpreters" (11). Nevertheless, in practice, even in codified systems, judicial interpretation remains significant, as no legal text can predetermine all possible circumstances (25).

The central challenge in debates over judicial discretion concerns the search for equilibrium between legal certainty and moral equity. Law is formulated to ensure predictability and equality; however, justice as a moral value sometimes requires movement beyond the rigidity of legal rules. As Aristotle argues, equity (epieikeia) is "the correction of law where, by reason of its generality, it falls short of true justice" (26). Judicial discretion may therefore serve as a bridge between law and morality, but if devoid of rational and ethical constraints, it may itself become a source of injustice (27).

One of the philosophical challenges in this context concerns the legitimate boundaries of judicial discretion. Herbert Hart (15), in his "core and penumbra" theory, argues that legal rules contain a "core of settled meaning" where no doubt arises; however, in penumbral cases, the judge must decide by appeal to rationality and judicial policy. Ronald Dworkin (14), by contrast, with the notion of the "Judge Hercules," contends that even in hard cases a right answer exists, which the judge must discover through recourse to moral principles and justice. These two perspectives represent the theoretical poles regarding the limits of judicial discretion: one emphasizing the autonomy of practical reason, the other underscoring the dependence of judicial decision-making on overarching principles of justice.

From the perspective of cognitive psychology, judicial discretion, if not accompanied by awareness of mental limitations, may create fertile ground for unconscious biases. When a judge holds broad interpretive authority, the likelihood increases that personal attitudes, past experiences, and cultural assumptions will influence the decision (8). In such instances, freedom of judgment may result not in flexibility but in inconsistency and inequality among cases (3). Therefore, judicial discretion must be constrained by cognitive and ethical requirements to ensure that justice is achieved more objectively and predictably.

Modern legal systems have employed two principal mechanisms to mitigate this risk: (1) sentencing guidelines and (2) supervisory bodies overseeing judicial conduct. In the United States, federal sentencing guidelines were established in the 1980s to reduce individual disparities among judges (28). Although such guidelines have limited judicial freedom, they have also, to some extent, shielded criminal justice from the effects of strong personal influences. In European countries such as the United Kingdom and Germany, independent judicial ethics commissions have formulated frameworks to review judicial behavior and decisions to prevent deviation from standards of justice (29).

On the other hand, some theorists (11) argue that judicial discretion is not a threat to justice but a necessity, because law is always general and abstract, and acquires meaning only through human judgment. In this view, legal justice without judicial discretion becomes a cold, impersonal bureaucracy. Accordingly, judicial discretion should not be eliminated but rather ethically and rationally managed. Such management requires cultivating judges who possess moral reflection, awareness of cognitive biases, and understanding of the social context of cases (30).

Comparatively, differences among legal systems in regulating judicial discretion reflect divergent philosophies of justice. In the United States, the idea of individualized justice holds that each case possesses its own particular characteristics and that the judge must render a contextually appropriate decision (31). By contrast, continental European systems emphasize structural justice and the preservation of legal coherence. Nevertheless, both traditions have, in recent decades, moved toward a hybrid approach: one that preserves legal standards while also

attending to the ethical and psychological dimensions of judging (5, 25).

A newly emerging domain directly linked to judicial discretion concerns the use of predictive technologies in criminal justice. Data-driven systems designed to forecast recidivism risk (such as COMPAS in the United States) effectively replace human judgment with "machine discretion." While the aim of such technologies is to reduce human bias, research shows that algorithms, due to reliance on historically biased data, may reproduce structural discrimination (16). This development raises a new challenge for justice: Should human judicial discretion be ceded to machines, or should it be reformed through ethical and cognitive safeguards? The prevailing answer in contemporary literature emphasizes a combined human–technology approach within a shared ethical framework (17).

Taken as a whole, judicial discretion - although a source of flexibility and individual justice - may, in the absence of ethical and cognitive oversight, become a vulnerability of the criminal justice system. True justice is realized only when the judge understands that "interpretive power" entails "cognitive and ethical responsibility." As Fuller (6) notes, law without ethics becomes soulless, and ethics without law descends into disorder. Therefore, balancing law, ethics, and cognition must be institutionalized not only in theory but also in the practical structure of criminal procedure. This balance constitutes the essence of justice in an age marked by complexity and cultural diversity.

Ethical Requirements and Their Role in Controlling Biases and Guiding Judicial Discretion

Judicial ethics constitutes the invisible foundation of criminal justice - a force that elevates the judge's decision from a technical, legal act to a human and moral judgment. If law represents the external order of justice, ethics serves as its internal order. Ethical obligations in criminal procedure not only guarantee appropriate and dignified judicial conduct toward litigants but, more importantly, play a fundamental role in controlling cognitive biases and guiding judicial discretion (6, 31). In essence, judicial ethics forms a bridge between cognition and law - a domain in which awareness of mental limitations and acceptance of moral responsibility converge.

At the first level, a distinction must be drawn between two dimensions of ethics in judging: the personal ethics of the judge and the institutional ethics of the judiciary. Personal ethics include internal virtues such as fairness, impartiality, epistemic humility, and honesty; institutional ethics, by contrast, refer to structures that promote transparency, accountability, and judicial independence. These two dimensions remain in constant interaction: an impartial judge cannot remain just without an independent institutional framework, and an independent system without ethically grounded judges risks degeneration (32).

One of the principal tasks of judicial ethics is limiting the influence of unconscious biases. As cognitive psychology has shown, even judges who sincerely intend to remain impartial remain vulnerable to cognitive heuristics (2). Here, ethics functions as a "corrective of cognition." As Rawls (18) argues, the ethics of justice is a form of self-discipline in practical reason that enables the individual to view decisions from a "neutral standpoint." This ethical self-awareness helps the judge maintain a critical distance from internal inclinations and external pressures, thereby avoiding entrapment in cognitive biases (23).

In practice, many legal systems have sought to institutionalize these principles through judicial codes of conduct. For instance, the "Bangalore Principles of Judicial Conduct," formulated in 2002 with UN support, emphasize six core values: independence, impartiality, integrity, propriety,

equality, and professional competence (33). Although these values may appear ethical in nature, they constitute direct responses to the cognitive and structural risks inherent in judicial decision-making. For example, "impartiality" involves not only avoiding conscious discrimination but also managing unconscious biases (9).

Judicial ethics also plays an essential role in guiding judicial discretion. Discretion without ethics may invite arbitrariness; yet when ethical principles serve as the judge's guiding compass, discretion becomes an instrument for realizing justice (27). As Max Weber notes, power without moral responsibility lacks legitimacy. Ethical responsibility reminds judges that each decision carries human consequences and affects real lives beyond the rigid framework of rules. Accordingly, ethics functions as a "soft constraint" that governs judicial behavior from within the judge's own conscience (10).

Across legal systems, judicial ethics has different emphases. In common-law systems, judicial ethics focuses on personal integrity, independence, and transparency; courts maintain that public trust in justice depends on public perception of judicial honesty (32). In civil-law systems, judicial ethics emphasizes preserving the coherence and dignity of the law. In France and Germany, for example, professional ethics constitute a formal component of judicial training, emphasizing "conduct befitting judicial office" and "preserving the dignity of justice" (29). Despite structural and cultural differences, all systems view ethics as complementary to law and essential for strengthening cognitive impartiality.

It is important to note that judicial ethics is not merely a set of external norms but also a reflective and internal process. An ethical judge acts not out of fear of sanction or reputational harm but, as MacIntyre (34) explains, out of commitment to the "internal good of the profession." This internal good is the realization of justice as the intrinsic purpose of adjudication. In this view, ethics becomes part of the judge's professional identity and governs conduct from within.

Nevertheless, a major challenge arises when ethical values conflict with legal requirements. In cases where strict application of the law results in injustice, the judge confronts a tension between "fidelity to law" and "commitment to justice." Here, ethical principles may serve a corrective role. According to Dworkin (14), in such cases the judge must turn to deeper moral principles - such as human dignity and fairness - to reach a decision that is both lawful and just. In this sense, ethics does not oppose law but rather serves the human and just interpretation of law (11).

Furthermore, in the contemporary era, judicial ethics must adapt to technological and social transformations. The rise of social media, public pressure, and data-driven technologies has placed judges in unprecedented ethical situations (17). For example, the circulation of partial or selective information about cases may influence judicial attitudes or call impartiality into question. In such contexts, adherence to ethical principles such as communicative restraint, intellectual independence, and transparency of reasoning becomes increasingly vital.

In some modern systems, such as those of Scandinavia, judicial ethics is taught institutionally. Judicial training programs include not only legal subjects but also cognitive psychology, applied ethics, and the philosophy of justice (35). The goal of this interdisciplinary approach is to enable judges both to recognize their cognitive limitations and to understand their moral responsibility in decision-making. Such integration of cognition and ethics may constitute the future model for judicial education and conduct in various legal systems.

Ultimately, ethical requirements in criminal procedure serve three essential functions: first, preventing cognitive biases through the

cultivation of ethical self-awareness; second, guiding judicial discretion toward humane justice; and third, strengthening public trust in the judiciary. Justice becomes sustainable when law is united with ethics and when the judge acts not merely as an executor of statutes but as the awakened conscience of society. Without this connection, law becomes an empty shell and adjudication loses its meaning. Thus, judicial ethics is not an intellectual luxury but a fundamental necessity for achieving cognitive and human justice in criminal procedure.

Comparative Analysis of Legal Systems' Approaches to Impartiality and Fair Adjudication

A comparative analysis of legal systems makes it possible to clarify how different legal structures and cultures confront the issues of impartiality, judicial discretion, and the mitigation of cognitive biases. In this discussion, four groups of legal systems - the United States (representing the common-law model and jury-based adjudication), France (representing the modern continental inquisitorial model), Germany (representing the Roman-Germanic system with its emphasis on principles and proportionality), and the Scandinavian countries (representing models characterized by transparency and high social trust) - are compared in order to highlight the differences and commonalities in strategies for addressing cognitive and ethical challenges.

The legal system of the United States and other common-law jurisdictions is based on features such as judicial independence, precedent, and the prominent role of the parties in the adversarial system. Its accusatorial structure and the existence of the jury place a substantial portion of factual determinations in the hands of groups of citizens, while the judge plays a legal-technical and supervisory role (5). This design has both advantages and disadvantages: on the one hand, public participation and diversity of viewpoints can moderate some individual biases; on the other hand, the presence of a jury and the power of media publicity may amplify availability and affective biases. Moreover, the adoption of tools such as sentencing guidelines and implicit-bias training in the United States demonstrates that the system experimentally seeks combined cognitive and institutional control (9, 28). Nevertheless, studies such as those on the algorithmic bias of COMPAS warn that attempts to "neutralize bias" through technology may reproduce structural inequalities (16).

In contrast, continental inquisitorial systems such as France place the investigating judge (juge d'instruction) at the center of evidence gathering and the direction of proceedings. This concentration of adjudicative authority increases the risk of the emergence and entrenchment of cognitive biases because the same individual is actively present at multiple stages of adjudication (25). For this reason, the legal tradition of France and several continental jurisdictions emphasizes the ethical and professional training of judges, strict rules on conduct and impartiality, and supervisory mechanisms (10). In other words, because judicial discretion is more concentrated in certain domains, institutional responses tend to rely more heavily on strengthening ethical requirements and procedural transparency.

The German legal system reflects an approach that balances strong legalism with the flexibility of judicial interpretation. German legal doctrine - particularly its emphasis on principles such as proportionality (Verhältnismäßigkeit) and the elaboration of fundamental rights - provides a framework that constrains judicial discretion through overarching principles (11). As a result, German judges, although they play a role in interpreting the law, must align their reasoning with legal principles and constitutional jurisprudence; this condition substitutes a form of "legal self-discipline" for arbitrariness and reduces individual biases. Additionally, the

strong legal tradition and formal judicial education in Germany reinforce professional attitudes and commitment to ethical standards.

Scandinavian countries (such as Sweden, Norway, and Denmark) are typically associated with high levels of public trust and transparency-oriented institutions. In these systems, the approach to impartiality generally relies on a combination of open judicial culture, interdisciplinary training (including psychology and ethics), and consultative procedures that strengthen collective decision-making and the documentation of reasoning (35). This model indicates that reducing biases does not depend solely on strict regulations; social trust, broad-based education, and institutional transparency also play decisive roles.

Comparative analysis further reveals that effective strategies are generally composite and multilayered: (a) institutionalizing ethics (codes of conduct, ethics commissions, and standards such as the Bangalore Principles) to establish clear norms; (b) cognitive training and awareness-building to enhance judges' self-awareness; (c) procedural design (group consultations, mandatory documentation of reasons, and transparency in reasoning) to reduce the impact of individual decision-making; and (d) oversight and accountability (review of decisions and disciplinary mechanisms) to preserve legitimacy and trust (8). Successful systems combine these tools based on their cultural context and legal structure; for example, the United States tends toward educational and mechanistic regulatory approaches, while continental systems emphasize professional institutionalization and principled frameworks.

Ultimately, the comparison demonstrates that no legal system possesses "absolute impartiality," and each faces its own advantages and shortcomings. The comparative lesson is that addressing cognitive biases and guiding judicial discretion requires interdisciplinary solutions tailored to the institutional and cultural characteristics of each system. A combination of legal rigor, cognitive education, and institutional ethics - adjusted to the specific judicial structures of each country - offers the best chance for fair and trustworthy adjudication.

CONCLUSION

A cross-disciplinary examination of cognitive biases, judicial discretion, and ethical requirements in criminal adjudication reveals that justice is not merely the product of law but the result of a complex interaction among human cognition, institutional structures, and moral values. Law provides the external framework of justice, but without cognitive insight and ethical commitment, this framework becomes an empty shell. The judge, as the central decision-maker in adjudication, stands at the boundary between rationality and humanity, where any cognitive bias or ethical lapse may distort the path of justice.

The analysis shows that cognitive biases are an inseparable part of human decision-making. A judge, no matter how well-trained or fair-minded, cannot completely escape the unconscious effects of the mind. Yet awareness of these limitations and the design of mechanisms to correct and restrain them are essential steps toward achieving genuine impartiality. In this context, judicial ethics functions as the awakened conscience of the justice system - a force that urges the judge to reconsider motives, judgments, and the consequences of decisions.

Judicial discretion, one of the most fundamental elements of fair adjudication, gains meaning only in the light of ethics. Discretion, if exercised without ethical guidance and awareness of cognitive biases, leads to arbitrariness; but when grounded in fairness, self-restraint, and responsibility, it becomes a tool for achieving humane and dynamic justice. Therefore, true justice lies in the balance between the judge's

freedom to interpret the law and the judge's commitment to ethical principles and cognitive rationality.

The comparative study of various legal systems shows that there is no single perfect model for achieving impartiality and fair adjudication. Each system, depending on its legal tradition, social culture, and institutional structure, employs different mechanisms to mitigate biases and regulate judicial discretion. Common-law systems emphasize anti-bias training and procedural transparency; continental systems emphasize professional ethics and supervisory structures; and Scandinavian systems emphasize social trust, collective decision-making, and transparency in judicial reasoning. These differences indicate that justice is a dynamic and culturally embedded concept, yet its foundation is universal: the integration of law with ethics and human cognition.

In the end, it may be said that sustainable criminal justice depends on three forms of synergy: first, cognitive synergy, which reduces mental biases through self-awareness and the study of the psychology of judgment; second, ethical synergy, which keeps the judicial conscience alive alongside the law; and third, institutional synergy, which guarantees independence and impartiality through transparent and accountable design. In such a combination, criminal adjudication becomes not merely a place for the application of law but a forum for realizing truth and human dignity.

Thus, an interdisciplinary approach to criminal adjudication leads us to a deeper understanding of justice - an understanding that places reason and ethics alongside law and situates the human being, with all their cognitive and moral complexity, at the center of justice. Justice, ultimately, is not born in statutory provisions but in the mind and conscience of the judge - where cognition, ethics, and law converge in a delicate equilibrium.

ETHICAL CONSIDERATIONS

Ethical issues (such as plagiarism, conscious satisfaction, misleading, making and or forging data, publishing or sending to two places, redundancy and etc.) have been fully considered by the writers.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interests.

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