

Expert Evidence, Probability and Judicial Certainty in Criminal Proceedings

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Abstract

This article examines the role of expert evidence within the system of proof in criminal proceedings, focusing on the relationship between probabilistic expert opinions and judicial certainty. Particular attention is paid to the judge's internal conviction (intimate conviction) as a decisive element of fact-finding and sentencing. The article argues that the assessment of evidence is inherently probabilistic, even where this is not explicitly acknowledged in judicial reasoning, which is especially evident in the case of expert opinions that rarely provide categorical conclusions. The resulting tension between probabilistic expert findings and the legal requirement of certainty raises fundamental questions regarding the evaluation and reliability of expert evidence. Using a theoretical and comparative approach, the study explores the limits of judicial certainty, the evidentiary value of expert opinions and their potential role as new evidence (novum) in retrial proceedings. It proposes a system-based perspective on criminal proof, according to which expert evidence and judicial conviction should be assessed as interconnected elements of the criminal justice system.

Keywords: *expert evidence, probability, judicial certainty, internal conviction, criminal proof*

I. Introduction

Criminal adjudication is fundamentally structured around two interdependent questions: the establishment of facts and their legal assessment. Although the determination of facts logically precedes the legal evaluation, correctly established facts alone do not guarantee a lawful decision. In criminal cases, the responsibility attached to fact-finding is particularly significant, as errors in establishing the past may lead to irreversible consequences. Judicial certainty therefore depends not only on legal reasoning, but primarily on the reliability and evaluation of evidence used to establish the facts.¹

This study focuses on expert evidence as a distinct and influential element of criminal proof. Expert opinions occupy a special position among evidentiary means, as they introduce specialised knowledge that lies outside the judge's own expertise. At the same time, expert opinions may also function as *novum*, capable of reopening final judgments through retrial procedures. This dual role raises fundamental questions regarding the scope and limits of expert evidence, particularly in light of the predominantly probabilistic nature of expert conclusions. Judicial practice often demonstrates a strong preference for categorical expert opinions, despite the fact that, in many expert fields—especially those grounded in natural sciences—such conclusions are practically unattainable. Most expert opinions are necessarily probabilistic, reflecting statistical reasoning and degrees of likelihood rather than absolute certainty. This tension highlights the central research problem of the article, how probabilistic expert opinions can be reconciled with the legal requirement of judicial certainty in criminal proceedings, with particular reference to Hungarian criminal procedure as an illustrative example. Furthermore, the legal

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¹ Cséka, E.: 'Evergreen' questions in criminal evidence. In: Ákos Farkas – Ilona Görgényi – Miklós Lévai (ed.): Festive studies in honor of Tibor Horváth's 70th birthday. Miskolc, 1997, p. 171.

understanding of probability does not coincide with its mathematical or statistical interpretation. While probabilistic reasoning is inherent in the evaluation of evidence within free proof systems, its applicability and reliability depend on judicial interpretation rather than formal calculation. This discrepancy has a significant impact on how expert opinions are assessed and integrated into judicial reasoning. The article also examines the role of the judge's internal conviction as a subjective yet indispensable element of judicial certainty. Judicial decision-making is not an isolated cognitive act but takes place within the broader framework of the criminal justice system, involving investigative authorities, prosecutors and courts in a multi-actor decision-making process. Understanding judicial certainty thus requires a system-based perspective, in which evidence, expert opinions and judicial conviction are assessed as interconnected components rather than independent elements.

II. Expert Evidence within Free Proof Systems

Criminal proof does not aim at the complete reconstruction of past reality, but at the establishment of legally relevant facts necessary for criminal liability and procedural decisions.² Only those facts and data that are filtered through substantive and procedural law become significant in criminal proceedings, while other elements of reality remain legally irrelevant. This limitation reflects both epistemological constraints and normative choices inherent in criminal procedure, as the past cannot be fully reconstructed and absolute certainty is unattainable in most cases. Accordingly, criminal proof operates within a framework of uncertainty that must nevertheless lead to a decision consistent with procedural guarantees and legal standards.³

The absence of a formal evidentiary hierarchy places particular emphasis on the position of the expert and the evidentiary value of expert opinions, which raises specific questions regarding judicial control, probability and certainty.

Criminal proof systems are embedded in broader procedural models that shape the role of the judge and the evaluation of evidence. While criminal procedures differ in their historical and structural foundations, contemporary continental systems are characterised by free proof, judicial discretion and the absence of a predefined evidentiary hierarchy. In this context, the evaluation of evidence is entrusted to the court, subject to procedural guarantees and reasoning requirements, rather than formal rules of proof.

Against this background, the rules of evidence determine both the extent of judicial discretion and the procedural limits within which the judge may rely on specialised knowledge, including expert opinions.⁴

However, due to the principle of free evidence, the expert opinion, as well as the evaluation of one of the pieces of evidence, belongs to the competence of judicial discretion, also considering that the exploration of contradictions between expert opinions does not in all cases require special scientific knowledge requiring special expertise.⁵

Criminal cases are often characterised by evidentiary scarcity; therefore, law enforcement authorities seek to make the most effective use of the available evidence, and the more effectively the evidence is evaluated, the more likely it is that the true facts will be established.⁶

² Cséka, 1997, cited, p. 171.

³ Cséka, E.: *Theoretical foundations of criminal fact-finding*, Budapest: KJK, 1968, p. 122.

⁴ Bérces, V.: *Dogmatic approaches to the basic concepts of evidence in criminal proceedings in Hungarian jurisprudence*. Pécs: *Iustum Aequum Salutare* XIV. 2018. 1, 19–32.

⁵ Court Decision No. BH 2007.34.

⁶ Fenyvesi, Cs. – Herke, Cs. – Tremmel, F.: *Criminalistics - Textbook and Atlas*. Budapest, Pécs: Dialog Campus Kiadó, 2005, p. 290.

The distinction between material truth and procedural truth reflects the normative and epistemological constraints of criminal adjudication, as the past cannot be fully reconstructed and absolute certainty is rarely attainable. Judicial fact-finding therefore does not aim at an abstract reconstruction of reality, but at establishing a sufficiently reliable factual basis for decision-making within the framework of procedural guarantees.⁷

Within free proof systems, no evidentiary means enjoys a predetermined probative hierarchy. The evaluation of evidence, including expert opinions, belongs to the court's discretionary competence, exercised on the basis of internal conviction and subject to legality and reasoning requirements. Although expert opinions do not formally prevail over other means of proof, their practical influence on fact-finding is often significant, particularly in technically complex cases. Importantly, the assessment of contradictions between expert opinions does not in all cases require specialised scientific knowledge, as courts remain competent to evaluate coherence, relevance and consistency within the evidentiary framework.^{8 9} This structural framework provides the basis for examining the specific role of expert evidence and the challenges posed by probabilistic expert opinions within criminal proof.

III. The Position and Role of the Expert

The expert occupies a specific position within criminal proof, distinct from both ordinary witnesses and judicial decision-makers. As a subject of proof, the expert contributes specialised knowledge that lies outside the judge's professional competence, thereby assisting the court in understanding facts that require scientific, technical or other specialised expertise.¹⁰

At the same time, the expert does not determine the facts of the case, as fact-finding and legal assessment remain within the exclusive competence of the court.¹¹

The doctrinal debate concerning the role of the expert has produced divergent conceptions, including views that characterise the expert as an assistant to the authority, a scientific judge or a special witness.¹²

While these approaches emphasise different aspects of expert involvement, none of them can displace the fundamental principle that judicial decision-making must remain independent from expert authority. The attribution of fact-finding power to the expert would undermine the requirement that judicial conviction be formed by the judge on the basis of the entirety of the evidence.¹³

The involvement of expert knowledge therefore raises a structural tension within criminal proceedings. While the court must rely on expert opinions in areas beyond its own competence, it cannot transfer responsibility for evaluating evidence or establishing facts to the expert. The probative value of expert opinions must be assessed by the court in light of coherence, consistency and relevance, even where the scientific content of the opinion cannot be independently verified in full.¹⁴

This tension becomes particularly apparent in cases where expert opinions are expressed in probabilistic terms rather than categorical conclusions. The relationship between probabilistic expert

⁷ Király, T.: *Criminal judgment on the border of the law. Study on the justice and probability in litigation*, Budapest: KJK, 1972, p. 139.

⁸ Elek, B.: *The relationship between judicial conviction and established facts*, *Jura* 2014/1. p. 42.

⁹ Court Decision No. BH 2019.11.295. I.

¹⁰ Erdei, Á.: *Fact and law in expert opinion*, Budapest: KJK, 1987.

¹¹ Farkas, Á.–Róth, E.: *The criminal procedure [Digital edition.]* Budapest: Wolters Kluwer Hungary Kft., 2019.

¹² Erdei, cited, p. 176.

¹³ Király, T.: *Criminal judgment on the border of the law. Study on justice and probability in litigation*, Budapest: KJK, 1972, p. 139.

¹⁴ Elek, cited, p. 42.

findings and judicial certainty therefore constitutes a central challenge of contemporary criminal proof, requiring careful consideration of both epistemological limits and procedural safeguards.¹⁵

IV. Judicial Certainty and Internal Conviction as Standards of Proof

The following analysis examines judicial certainty and internal conviction as standards of proof that determine how courts deal with uncertainty, thereby providing the conceptual framework for assessing the role of probabilistic expert evidence in criminal proceedings.

During the proof, if the judge's conviction does not reach the desired level, it results in the failure of the proof, i.e. lack of proof.¹⁶ The central element of evidentiary procedure law is the required level of provenance, and the question of further interest is the scientific measure of certainty, that is, whether there is an objective or even universal measure of certainty. The objective process of fact-finding is interspersed with subjective, often psychological factors related to the inner state of consciousness, intuitive convictions.

At this point, however, I would like to note that internal conviction is just as important in criminal proceedings for the justice system, the investigative authority, the prosecutor's office, as it is in the case of the court.¹⁷ Moreover, in some cases, for example in the case of economic crimes, the level of conviction on which the facts are established may differ before the criminal proceedings, or during the investigation of the same act in the context of the concurrent administrative proceedings.¹⁸

In general, it is true that the expectation regarding the level of evidence is basically formed and shaped by judicial practice. Considering that the social phenomena regulated by law are fundamentally unique, the universal degree of proof is difficult to interpret at a practical level¹⁹, so the procedural codes do not and cannot define it objectively. Another reason for this hiatus may be the difficulties arising at the level of contradictions arising from the principle of proof.

Apparently, different legal systems also require different levels of proof, but the judge must be sure of guilt regardless of the legal system. Thus, in the common law legal systems, 'beyond reasonable doubt', the measure of certainty excluding all doubts, and 'inner conviction', internal conviction, as the measure of certainty, in the mixed system with French and German roots ultimately mean the same thing.²⁰

The probability bordering on certainty, which can be interpreted as an objective standard, is used by the court only in exceptional cases. This happens when the probative value of the facts can be worked out with exact accuracy in a verifiable way using mathematical probability calculation²¹

In German and Austrian practice, a higher degree of probability is sufficient to form a judge's conviction, which includes, in addition to objective certainty, the subjective element of the judge's inner conviction. This takes into account the fact that complete certainty, worked out on a natural scientific basis, is typically not available in civil litigation. German judicial practice and law do not require the judge to be convinced beyond all doubt. The goal is to reach the decision-making judge's own conviction: the judge must reach a level of certainty that can be used in practical life. The reason for this in the literature is that the result of the proof can be justified and defended to the outside world, so the

¹⁵ Kuhl, A.: *Gerichtliche Sicherheit und der Wert von Sachverständigengutachten*, Miskolc: Doctoral Conference, University of Miskolc, 2023, pp. 121-126.

¹⁶ Kúria, *Expert evidence in court proceedings. Studies from the topic of expert evidence*, Legal Practice Analysis Group Summary opinion, 2014, pp. 18-19.

¹⁷ Finszter, 2020, cited, p. 185.

¹⁸ Elek, cited, p. 42.

¹⁹ Kuhl, cited, p. 125.

²⁰ Elek, cited, p. 43.

²¹ E.g., lawsuits aimed at establishing origin

high degree of probability depends on the judge's assessment, which must be handled flexibly. This measure is treated abstractly, but not by making belief a neutral category.²²

In the case of the states of the Scandinavian legal family and the common law countries, the overwhelming probability of proof is expected. This requires the selection of the most likely alternative as the basis for the decision if there are several possibilities for establishing the facts.²³

The determination of the standard of evidence in English law can be characterized as if, as a result of the evidence, the judge is convinced that the existence of a fact that needs to be proven is more likely than its non-existence, then the party has fulfilled its obligation to prove the alleged fact. The logical consequence of this is that a fact cannot be considered proven if both or possibly more alternatives are equally likely.²⁴

An important method of increasing reliability can be the comparison and exclusion of versions of the facts that arose during the procedure. In every court proceeding, the judge must choose between at least two versions of the facts, such as between the prosecution and the defence, or between the plaintiff and the defendant. Norwegian judicial practice requires the existence of an adequate and sufficient probability in relation to the proven existence of a fact. However, the Scandinavian legal family also recognizes the normative regulatory possibility that the law explicitly indicates the degree of proof of a fact, typically with the wording that is obvious or beyond doubt.²⁵

These approaches to judicial certainty demonstrate that criminal adjudication necessarily operates with varying degrees of probability, which becomes particularly problematic when expert opinions themselves are formulated in probabilistic terms.

V. Probabilistic Expert Opinions and their Evidentiary Value

Expert opinions in criminal proceedings are frequently expressed in probabilistic terms rather than categorical conclusions. This is particularly true in areas where expert findings are based on statistical inference, scientific modelling or experience-based assessments rather than direct observation. The probabilistic nature of expert opinions raises fundamental questions regarding their evidentiary value, especially in legal systems that require judicial certainty for the establishment of criminal liability.

The following analysis focuses on the evidentiary value of expert opinions within free proof systems, with particular regard to the relationship between judicial reasoning, probative force and the probabilistic nature of expert knowledge.

From the point of view of adjudication of the legal dispute, the procedural law institutions are suitable for the court to draw conclusions about the events that happened in the past and related facts.²⁶

Árpád Erdei draws attention to the fact that in proving the crime, the relevance and truthfulness of the evidence must be distinguished.²⁷ This distinction can be made because it is not what is possible based on the available information that must be proven, but what is necessary on the basis of legal facts, so the criminal substantive law provides guidance for the examination of relevance.²⁸

Subsumption is also the central element of the judicial decision in the context of expert evidence: the evaluation and consideration of the relationship between the legal facts governing the adjudication of the legal dispute and the facts established in the trial. In this process, i.e. during the evidentiary

²² Virág, Cs.: Sources of expert duty, International theoretical perspective, in Kúria: Summary opinion Expert evidence in court proceedings, Studies from the topic of expert evidence, Budapest: Studies section, 2014., p. 18.

²³ Probability-balancing in English

²⁴ Virág, cited, p. 18.

²⁵ Ibid, p. 18.

²⁶ Kúria, Theoretical and practical issues of judgment certainty, Budapest: Criminal-Administrative-Labour and Civil Colleges, Legal Practice-Analytical Group, Summary opinion, 2017., p. 36.

²⁷ Erdei, cited, p. 176.

²⁸ Finszter, 2020, cited, p. 179.

procedure, the court deduces the facts to be proven from the evidentiary facts learned in a logical procedural framework. During expert evidence, the court establishes the facts using special expertise and specialist knowledge unknown to the court, the truth or falsity of which it ultimately decides. Analytical assessment of expert opinions by the court, its methods and, in connection with this, the reliability and guarantees of expert opinions constitute a central issue in relation to expert evidence, in addition to the certainty of judgment and the value of expert opinions.²⁹

It should be mentioned that compared to the concept of relevance, ‘probative force’ has additional meaning. The latter already results in the fact that the given means of proof or evidence is specifically taken into account when deciding on criminal liability.³⁰

In the context of the determination of the facts governing the decision of the legal dispute, the right of discretion based on free material conviction by combining all the evidence applies to the fact that in criminal procedural law, the probative value of the individual means of proof is not determined in advance. In this system, there is no hierarchical relationship between the means of proof, so the evidence provided by the experts, the expert opinion, has neither a rank nor an order, the proof procedure is basically a system and not a chain of proof.³¹

In the continental legal system, the court can freely determine the probative value of expert evidence, without any legal obligation, and they can be used freely when establishing the facts of the case. The issue of judicial control and consideration of the facts established by the experts takes on a special role due to the court's lack of special expertise, which actually justified the introduction of the expert to the trial.

VI. Expert Opinions as *Novum* and the Limits of Retrial

It is common to refer to a new expert opinion, mainly to a specialist question, after the judgment becomes final. The essence of the retrial is that a decisive fact is missing from the evidence on which the judgment was based. However, this hiatus cannot arise from the re-evaluation of the considered, i.e., already existing, evidence, or from its re-evaluation with new evidence.³²

On the basis of *novum*, a retrial can be ordered, that is, a factual objection to a final decision - that is, a challenge to the established facts - is valid if the reported new evidence has not arisen in the main case, or has arisen but was not evaluated by the trial court, and the evidence to be considered new refers to a fact to be proven, and is thus suitable for the establishment of such a fact different from a final decision, or for the establishment of a lack thereof. The evidence that is considered new is of a decisive nature due to its ability to establish a different or new fact, and it also makes it likely that the provisions of the final decision regarding guilt or the imposition of punishment must be substantially changed, or the proceedings must be terminated.³³ Without considering the merits of the evidence, the trial court must also make a well-founded decision on whether the provided expert opinion is actually new evidence or another *novum*, and on the other hand, it must also take a position on the question of

²⁹ Kuhl, cited, pp. 121-126.

³⁰ Bérces, V.: Dogmatic approaches to the basic concepts of proof in criminal proceedings in Hungarian jurisprudence, Pécs: *Iustum Aequum Salutare* XIV. 1/31/2018.

³¹ The requirement of a closed chain of circumstantial evidence spread in Hungary under the influence of Vyshinsky. However, according to more recent research, evidence can rather be perceived as a network, where the decisive criterion lies in the unique and unrepeatable combination of evidentiary elements in each individual case. In fact, the chain requirement applies only to a part of circumstantial evidence, namely to the so-called intermediate links of circumstantial evidence, and even there it should be regarded merely as a guideline for evidence that is serially connected. In Imre Kertész: *The theory of material evidence in the science of criminal procedure law and forensics*, Budapest, 1972., pp. 222-231.

³² Kúria, Factual correction after legal force - retrial in criminal proceedings, Budapest: Penal College, Legal practice analysis group, 2018., p. 58.

³³ Court Decision No. BH2012. 188.

whether it is suitable for achieving the purpose of retrial, i.e., can it result in a change of the challenged final decision.

According to Act XC of 2017 on Criminal Procedure of Hungary, the existence of each statutory condition for retrial must be examined individually and in connection with each circumstance presented as new evidence. If one of these conditions is not fulfilled, there is no need to examine the remaining ones.

According to § 637(1)(a) of this Act, new evidence must relate to a fact; this is a necessary condition for establishing the probability of a different factual situation. In the present case, however, the differing opinions of the experts were not based on new or different facts. Rather, the same factual circumstances established by the experts who acted in the main proceedings were evaluated differently from a professional perspective. Therefore, this does not constitute evidence of a new fact, but merely a different expert opinion.

In one particular case, the defence submitted a request for retrial based on a newly obtained expert opinion concerning the defendant's mental state. The new expert opinion concluded that the defendant's capacity for criminal responsibility was limited and therefore should be regarded as new evidence constituting grounds for retrial. However, although the expert opinion considered in the final judgment was based on the same diagnosis, it did not conclude that the defendant's capacity for criminal responsibility was limited. The expert opinion designated as the basis for the retrial took the different position based on the same set of facts, known by the experts who acted previously, i.e., based on the same fact, according to which the defendant's dissociative personality disorder slightly limited his ability to reason at the time of the commission of the crime. And this only aims to re-litigate the legal consideration regarding the judicial finding of fact, so re-litigation is not possible.³⁴

According to another decision related to the above case, in order to allow retrial, not the means of proof, but the evidence must be new.³⁵ The same evidence from a different source, through a different means of proof, is not new evidence. This *ratio decidendi* may also be relevant to the expert opinions indicated in the above case, which are different means of proof, but new evidence does not necessarily come from them.³⁶

VII. Conclusion – A System Based Approach

It is not disputed that a probabilistic evaluation of evidence takes place every time, although in many cases this is not done consciously or methodically.

The judge's inner conviction, which is essential in the formation of judgment certainty, is precisely what makes judgment certainty measurable by probability³⁷ and the concepts of probability at the same time the most suitable for reducing uncertainty. This does not imply a transformation of judicial certainty into a purely quantitative standard, but rather highlights the role of probabilistic reasoning as an auxiliary tool in managing uncertainty within judicial decision-making.

Probabilistic expert opinions only represent a certain degree of certainty and rarely provide definitive conclusions. For this reason, they should be used with caution, especially when it comes to breaking the legal force. It must also be taken into account that judges do not make decisions in isolation. The judicial decision-making process takes place within the broader criminal justice system, with investigative authorities, the prosecution and the courts acting in an interconnected manner. In addition,

³⁴ Kúria, cited, pp. 9-11.

³⁵ Court Decision No. BH2020. 266.

³⁶ Court Decision No. BH2020. 358.

³⁷ Elek, cited, p. 41.

when examining the judge's - personal and certain³⁸ - inner conviction as a subjective element, it is important to point out that it is significantly offset by the judge's qualifications, professional experience, career suitability, and professional ethical rules, and this cannot be ruled out during decision-making, but rather a necessary condition for judicial judgment.

Internal conviction requires exceptionally high professional training and moral integrity, which can be achieved on the one hand through the selection of personnel of the judiciary and its quality-assuring career system, and on the other hand is guaranteed by legal guarantees of the independence of decision-makers.³⁹

The systemic approach can be a paradigm shift in the examination of the level of certainty and the assessment of the effectiveness of the justice system during judgments, with regard to the obligation to provide proof to the outside world, and also the social assessment of judgments related to legal certainty.

Just as it is true of evidentiary systems that evidence cannot be examined in isolation or as part of a chain, I believe this is also true of the judiciary. The evidence largely depends on the work of the judicial bodies, the investigative authorities, the prosecutors and courts, which together constitute the broader concept of criminal justice. The criminal procedure therefore includes the justice system, that is, the criminal justice system as a whole.

The whole of the criminal justice system can therefore be considered a criminal procedure, i.e., the actions of all the bodies and persons contributing or participating in the procedure, and all the procedural legal relations and relationships that arise and exist between them.⁴⁰

In this broadly interpreted system, it can be seen that the value and evaluation of probabilistic expert opinions, the role of the expert opinion in criminal proceedings, can be given a different weight, but even the *novum* can gain a new approach in the light of certainty, and in a more distant sense, public trust and public safety.

In order to reduce the level of uncertainty outlined above in judgment decision-making, a change in attitude is necessary, which, in addition to accepting probabilistic expert opinions and probability experts, gives space to the system approach and thus places evidence and judgment on a new basis in the system-based approach to criminal proceedings.

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³⁸ Finszter, 2020, cited, p. 184.

³⁹ Finszter, 2005-2007, cited, p. 26.

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