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The Role of Confirmation Bias in Criminal Proceedings: Insights from the Mór Bank Robbery

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Abstract

Aim: The aim of the study is to examine the role of confirmation bias in criminal proceedings, with particular focus on its manifestations in investigative, prosecutorial, and judicial decision-making, and to demonstrate how this cognitive bias may contribute to wrongful convictions.

Methodology: The research adopts a doctrinal and interdisciplinary approach, integrating findings from criminal procedural law and cognitive psychology. The study is based on a review of relevant Hungarian and international literature, as well as the analysis of specific case studies.

Findings: The analysis shows that confirmation bias may be present at all stages of criminal proceedings and often operates through self-reinforcing mechanisms that distort the evaluation of evidence. It contributes to the neglect of alternative hypotheses, the emergence of tunnel vision, and may escalate at a systemic level. Furthermore, the study finds that neither expert evidence nor the use of technological tools eliminates the risk of bias.

Value: The study contributes to the academic discourse on the fairness of criminal proceedings by providing a systemic analysis of cognitive biases. Its findings support the development of procedural safeguards and methodological approaches aimed at mitigating distortions in decision-making.

Keywords: confirmation bias, criminal procedure, cognitive bias, evaluation of evidence, justice system, tunnel vision

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Introduction

One of the prominent areas of Professor Csaba Fenyvesi's research work is *justizmord*, that is, the problem of wrongful convictions, which can be interpreted as one of the most severe malfunctions of the criminal justice system (Fenyvesi, 2014). In his studies, he presents in detail the criminalistic and procedural errors that can ultimately lead to the conviction of innocent persons. In the background of these errors lie not only methodological or organizational shortcomings, but frequently also psychological factors such as confirmation bias. This phenomenon manifests itself in the tendency of procedural participants to prefer information that supports their already established hypotheses, while ignoring or undervaluing data that contradict them. The present study examines the correlations between these two phenomena – *justizmord* and confirmation bias – pointing out how cognitive biases can contribute to severe errors occurring during criminal proceedings. The objective of this study is to demonstrate how confirmation bias appears in the various stages of criminal proceedings, and how it can contribute to the emergence of wrongful convictions. At the center of the investigation stands investigative, prosecutorial, and judicial decision-making, with particular regard to how individual procedural actors interpret and select the available evidence. The baseline assumption was that the hypothesis-driven nature of criminal proceedings favors the development of confirmation bias, which influences evidence gathering and evidence evaluation in a self-reinforcing manner. A further hypothesis is that confirmation bias is not merely an individual psychological phenomenon, but also appears at an institutional level and poses a systemic risk to the objectivity of the justice system. Finally, the study proceeds from the premise that these biases can be mitigated through appropriate methodological and organizational tools, thereby reducing the danger of the emergence of *justizmord* cases.

The Theory of Confirmation Bias

The Psychological Background of Confirmation Bias

Confirmation bias is one of the most well-known and widely researched cognitive biases, referring to the phenomenon where people tend to favor information that validates or supports their prior beliefs or hypotheses, while ignoring or assigning less significance to data that contradict them (Klayman & Ha, 1987). This psychological phenomenon has been known for several decades and has received considerable attention both in basic research and applied sciences – such as law, medicine, or criminology. The roots of confirmation bias are to be found in the fundamental findings of cognitive psychology, according to which human information processing is not entirely rational, but is heavily influenced by prior experiences, beliefs, and emotions (Kunda, 1990). People's mental models – that is, their internal representations of the world – guide attention, memory function, and perception, meaning that the interpretation of new information also occurs through these filters (Neisser, 1976). So-called belief perseverance is the tendency for an individual to continue confirming a theory despite the fact that the evidence underlying the theory contradicts it (Anderson & Kellam, 1992). Numerous explanations have been put forward for this bias. According to Festinger's theory of cognitive dissonance, people strive for internal consistency and experience unpleasant psychological tension when new information contradicts existing beliefs. They often reduce this tension by rejecting or reinterpreting the conflicting data while reinforcing their prior stance (Festinger, 1957). Similarly linked to this is the theory of motivated reasoning, which emphasizes that our thinking processes serve not only the search for truth but also the reinforcement of desired conclusions (Kunda, 1990). Therefore, people tend to seek out and interpret information that supports the desired outcome, even when it is objectively less supported. A specific variation of confirmation bias is the sunk cost fallacy, also known as the Concorde effect (Arkes & Blumer, 1985), which derives its name from the Concorde aircraft. The development of the Concorde was funded by the British and French governments, and although it became clear during the testing period that it would not be economically viable, the project was nevertheless carried through to completion – partly because 'too much money had already been sunk into it.' The Concorde effect refers to individuals or organizations continuing unprofitable or futile projects merely because they have already invested heavily in them, making it difficult to withdraw due to prestige or self-justification (Lidén, Gräns & Juslin, 2018). In criminal proceedings, this may manifest when the investigative authority or the prosecution service continues to push an investigative lead or a suspect, despite the fact that new evidence weakens the substantiation of the hypothesis. Another related psychological mechanism is the phenomenon of belief perseverance, according to which people maintain their prior conviction even if the evidence on which it is built is refuted. Refuting evidence is regarded as insignificant or misunderstood (Ross, Lepper & Hubbard, 1975). This is particularly dangerous in criminal justice because a mistakenly formed suspicion can persist for a long time and influence the interpretation of evidence. Recognizing the bias is further complicated by the existence of misconceptions among legal practitioners and experts, according to which extensive experience, expertise, or merely good intentions alone provide protection against cognitive biases. Dror, however, points out that neither expertise nor faith in self-control renders decision-makers immune; indeed, the conviction that one is capable of overcoming one's own biases through sheer willpower is itself a mistaken assumption (Dror, 2020).

Confirmation Bias in the Context of Criminal Proceedings

Criminal proceedings provide a specific environment for confirmation bias. By its very nature, the investigative and prosecutorial process is hypothesis-driven: based on initial information, investigators establish assumptions regarding the identity of the perpetrator and the circumstances of the crime. This initial narrative can subsequently determine what evidence they seek, which witnesses they interview, and how they interpret expert opinions (Findley & Scott, 2006). This danger is further compounded by the fact that the outcome of decision-making is substantially influenced not only by the substance of the information but also by the order of its presentation: differing conclusions can be drawn from the exact same data depending on the order in which the proceeding person encounters them. In this regard, Dror and Kukucka emphasize that in expert decision-making, it is advisable to examine raw evidence first and disclose contextual information only subsequently, as this can reduce the risk of confirmation bias and circular reasoning (Dror & Kukucka, 2021). The literature underscores that confirmation bias can affect every actor in the justice system:

- Investigative authorities: they tend to focus on the primary suspect while devoting little attention to the investigation of alternative perpetrators.
- Prosecutors: following the decision to prosecute, they frequently seek out and present evidence supporting the accusation, ignoring exculpatory data.
- Courts: during the trial, the first impression (and the accusation itself) can powerfully influence the evaluation of evidence.
- Experts: contextual information received during the investigation can influence the objectivity of the expert opinion (Dror & Cole, 2010).

In criminal proceedings, confirmation bias frequently operates in the form of a self-reinforcing cycle: evidence gathered and interpreted based on an existing hypothesis confirms the original hypothesis, which further reinforces the biased selection of evidence. The latest literature adds to this that the bias does not necessarily remain at the level of a single procedural actor. According to Dror, different actors and sub-processes within criminal justice can mutually reinforce one another's presuppositions, thereby generating a so-called *bias cascade* and *bias snowball* effect: the initial bias ripples through the system, appearing with ever-greater weight in subsequent decisions (Dror, 2025). This circular logic poses a severe threat to the fairness of the administration of justice. The impacts of confirmation bias in criminal justice can be severe:

- Wrongful identifications and convictions.
- Failure to locate the actual perpetrator.
- Long-term detention of the innocently accused.
- The deterioration of legal certainty and public trust in the justice system.

Such consequences are not merely theoretical dangers: we are aware of numerous notorious international and domestic cases, but there are also less prominent procedural errors in many smaller cases explainable by similar mechanisms, which point to the tangible risks of confirmation bias. In the next chapter, we present in detail the concrete manifestations of confirmation bias in the case of investigative authorities, the prosecution service, the court, and other procedural actors, illustrated with domestic examples.

Manifestations of Confirmation Bias in Criminal Proceedings

Confirmation Bias and Investigative Authorities

The work of investigative authorities is fundamentally hypothesis-driven: based on the first pieces of information, witness testimonies, and traces received regarding a crime, they establish assumptions about the potential perpetrator, the method of commission, and the motivation (Kassin, Dror & Kukucka, 2013). This initial narrative can subsequently set the direction for the search for and evaluation of evidence. Although constructing hypotheses is a natural and indispensable part of the investigation, premature and over-rigid commitment can easily trap investigators within confirmation bias (Lidén, Gräns & Juslin, 2018). A typical manifestation of confirmation bias within investigative authorities is that they seek out evidence fitting the suspicion constructed first, while ignoring or assigning less weight to information contradicting the hypothesis (Findley & Scott, 2006). In the psychological background of this phenomenon frequently lie motivated reasoning, the reduction of cognitive dissonance, and the Concorde effect (as elaborated previously): due to the time and resources invested in the investigation, police officers tend to persist with a single theory, even when new evidence refutes it. The pressure within the investigative authority and the expectations of public opinion also play a non-negligible role. In high-profile cases generating significant social interest – such as serial killings or prominent violent crimes – investigative authorities often face intense political and media expectations to deliver swift results. De Keijser and van Koppen established that professional judges can display a judgment paradox: judges required less evidence to convict a suspect if the crime was more severe (even though one would think that more well-founded decisions are born precisely in more severe cases). This environment favors the development of confirmation bias, as validating the suspicion frequently becomes more important than its objective examination (de Keijser & van Koppen, 2007). One of the best-known examples in the history of Hungarian criminalistics is the case of the 'Martfű Monster,' which clearly demonstrates the dangers of investigative confirmation bias. At the end of the 1950s, a brutal murder occurred near Martfű: a local woman was raped and killed. During the investigation, the police quickly cast suspicion on János Kirják, who had previously known the victim, and certain circumstances (such as his location and alleged conflicts) 'fitted' the criminal narrative constructed by the investigators. Instead of examining all possible perpetrator hypotheses in parallel, investigators focused almost exclusively on gathering evidence against Kirják. As a result:

- conflicting witness testimonies were given less consideration or were discredited;
- among the expert opinions, those supporting the suspicion were preferred;
- data supporting Kirják's innocence – such as details regarding his alibi – were treated with little attention (Szabó, 1980).

At the end of the proceedings, János Kirják was convicted (he was originally sentenced to death, but the Supreme Court commuted this to life imprisonment on appeal – fortunately), while the actual perpetrator remained at large and committed further crimes. It was only years later that it came to light that Péter Kovács, the 'real Martfű Monster,' should have been held responsible for the homicides. The tragedy affected the lives of several people: not only the victims and their family members, but also the innocently convicted man (Dulai, 2020). This case clearly illustrates the phenomenon of 'tunnel vision,' which is an extreme form of confirmation bias (Findley & Scott, 2006). From a criminalistics perspective, all of this can be interpreted as the abandonment of the competition of hypotheses. Mészáros emphasizes that at the beginning of an investigation – excepting entirely clear-cut cases – multiple competing hypotheses must exist, and steadfast adherence to a single selected hypothesis is one of the most severe investigative errors. The consequence of this is that the investigator neglects other hypotheses and sweeps refuting data aside, while forcing the acquisition of evidence confirming the chosen theory (Mészáros, 2021). Due to the narrow focus of the investigators, alternative scenarios and suspects remained ignored, thus rendering the gathering and evaluation of evidence one-sided. Not to mention that in 1950s Hungary, the criminal-political goal itself was the swiftest possible detection of the perpetrator, even at the risk of convicting someone other than the real culprit. The Martfű case and similar investigative errors warn that confirmation bias:

- stems from premature commitment: hypotheses formulated at the very beginning of the investigation lock thinking in place (O'Brien, 2009);
- results in information asymmetry: investigators devote more time and resources to substantiating the suspicion than to refuting it (Schmittat et al., 2021);
- strengthens contextual biases: experts and witnesses can also receive distorted information, which further intensifies partiality (Dror & Hampikian, 2011).

From the perspective of prevention, the literature proposes several solutions:

- Conscious examination of alternative theories ('consider-the-opposite' strategy) (Hirt & Markman, 1995);
- Involvement of independent investigative teams for review;
- Evidence evaluation independent of knowing the suspect's identity.

Confirmation bias within the investigative authority is therefore not merely an individual psychological weakness, but a problem sustained by organizational and cultural factors as well. The case of the Martfű Monster highlights that a flawed investigative focus and biased evidence analysis can lead justice astray for decades, while the actual culprits can claim new victims (Herke, 2025).

Confirmation Bias and the Prosecution Service

A prime example of prosecutorial confirmation bias is the case of Ronald Cotton (USA, North Carolina, 1984). Based on the eyewitness testimony of Jennifer Thompson, Cotton was convicted of sexual assault after the woman positively identified him from a photo lineup and subsequently during a live lineup as well. In 1995, DNA testing proved that the actual perpetrator was Bobby Poole. Cotton spent ten and a half years in prison innocently because no thorough investigation was conducted following the initial identification (Weinberg, 2012). This case illustrates well the danger of confirmation bias: in prosecutorial decision-making, the theory built upon early eyewitness testimony became so dominant that the weight of new evidence was considered only late. The flawed indictment eventually led to a final conviction as well. In the United States, several cases have highlighted the dangers of prosecutorial confirmation bias, such as the Duke Lacrosse case, where the prosecution maintained the charges against three university athletes for a long time, even though the DNA evidence clearly pointed in a different direction (Mosteller, 2007). In the United Kingdom, the Birmingham Six case displayed a similar pattern, where the prosecution fought for years against the defendants accused of a bombing, even when new evidence emerged regarding their innocence (Mullin, 1997). The role of the prosecution service in Hungarian criminal proceedings is threefold: on the one hand, it supervises the legality and expediency of the investigation; on the other hand, it prepares and presents the indictment before the court; finally, in certain cases, it conducts the investigation itself (in respect of the latter, the observations made regarding the investigative authority are applicable). This threefold function carries the inherent risk that the prosecutor – aligning with the findings of the investigative authority – himself becomes a victim of confirmation bias that reduces the possibility of objective evaluation. From the perspective of cognitive psychology, confirmation bias manifests itself here in the tendency of the prosecutor to interpret the available evidence in a way that supports the already established theory of the prosecution, while giving less consideration to or downplaying evidence offering exculpatory or alternative explanations (Nickerson, 1998). Prosecutors frequently base their further decisions on the information received at the beginning of the investigation and on the image of the perpetrator established by the investigative authority (Findley & Scott, 2006). In practice, this can lead to the prosecutor supporting the indictment even if subsequent evidence weakens its substantiation. In such cases, confirmation bias is not merely a passive phenomenon, but an active decision-making factor that can push the indictment process in a direction contrary to the presumption of innocence. By the very nature of prosecutorial work, the objective of the indictment is to prove guilt beyond reasonable doubt before the court. However, this can make the prosecutor prone to diminishing the value of exculpatory evidence or questioning its relevance (Kassin, Dror & Kukucka, 2013). The phenomenon of motivated reasoning in this context lies in the prosecutor potentially feeling that their own professional success, reputation, and 'winning the case' are more important than uncovering the actual truth (Kunda, 1990). Behind a flawed indictment often lies the fact that adhering to the theory of guilt developed during the investigative and prosecutorial stage becomes a matter of prestige. In the institutional functioning of the prosecution service, success indicators frequently include the rate of indictments and the number of convicting judgments. This can exert implicit pressure on prosecutors to ‘carry through’ the initiated cases, even if doubts arise in the meantime. To mitigate confirmation bias, several solutions exist in the case of the prosecution service:

- An independent unit assessing the substantiation of the indictment: prior to filing charges, a different prosecutorial department or an independent professional body evaluates the evidence (Burke, 2006).
- A „devil’s advocate” procedure: during the preparation of the case, it is the task of a specifically designated prosecutor to represent the counter-arguments (Nemeth, Brown & Rogers, 2001).
- Further education and training: educating prosecutors on cognitive biases using practical examples.
- A mandatory review mechanism: if new, exculpatory evidence emerges, an automatic case review process should be initiated (Kerstholt & Eikelboom, 2007).

Confirmation Bias and the Court

The task of the court in criminal proceedings is the impartial and balanced evaluation of evidence, taking into simultaneous consideration the arguments of both the prosecution and the defence. In practice, however, judicial decision-making can also be influenced by cognitive biases, including confirmation bias. The essence of this is that when evaluating evidence, the judge tends to prefer information supporting their already formed opinion or hypothesis, while taking conflicting data into account with less weight (Nickerson, 1998). Prominent among the fundamental principles of criminal procedure are the presumption of innocence (*praesumptio boni viri*) and the requirement of proof beyond reasonable doubt (*in dubio pro reo*). Confirmation bias, however, can easily lead to the judge striving during the course of the trial – consciously or unconsciously – to prove the guilt of the defendant rather than examining possibilities for acquittal. This is particularly dangerous if the court arrives at the trial with a prior expectation derived from the investigative files and conducts the verification subordinately to this expectation (Kahneman & Frederick, 2002). A prime example of judicial confirmation bias is the Mór bank robbery, where (as analysed in detail in the next chapter) a severe criticism of the judicial proceedings was that verification was directed almost exclusively towards substantiating the guilt of the defendants, while the examination of exculpatory evidence or alternative hypotheses was sidelined. Confirmation bias manifested itself here in the court accepting the prosecution’s theory at an early stage of the trial and concentrating further evidentiary actions on reinforcing it (Herke, 2021). A similar phenomenon was observed in the United States in the case of the Central Park Five, where judicial evaluation ignored the possibility of exculpatory DNA evidence for years because the defendants' prior confessions fitted the prosecution's theory (Boston Bar Association, 2009). In the United Kingdom, the case of the Guildford Four displayed a similar pattern, where the court adhered to the early prosecution theory for a long time despite the fact that new evidence and witness testimonies pointed in a different direction (Usher, 1990). The judicial role entails a high level of responsibility and authority, which psychologically renders it difficult for the affected judge to admit their own error. The review of judgments that have entered into force thus frequently occurs only in the possession of new, indisputable evidence – such as a DNA sample or a confessing statement. This institutional and human factor together reinforces the persistence of confirmation bias in judicial decision-making. Judicial confirmation bias is particularly dangerous because the court's decision is the final point of the proceedings, and rectifying a wrongful conviction can take years or decades. An important lesson of the Mór case is that courts should guarantee, at an institutional level, the examination of alternative narratives and exculpatory evidence with equal weight.

Other Confirmation Bias Phenomena (Experts, Witnesses, Defence Counsel, Defendant)

Confirmation bias can affect not exclusively investigative authorities, the prosecution service, and the court, but other actors in criminal proceedings as well. Experts, witnesses, defence counsel, and the defendants themselves can be subjects of this psychological phenomenon. Since all of them interpret events along their own experiences, interests, emotions, and presuppositions, the danger exists that they process the information available to them selectively, reinforcing their own narrative.

Expert Confirmation Bias

Expert evidence is one of the most important elements of criminal proceedings, particularly when specialized expertise is required to clarify the facts. At the same time, international literature shows increasing evidence that experts are also exposed to confirmation bias (Dror et al., 2005). An expert's prior information – such as background data received from investigators or the prosecution service – can unconsciously influence the evaluation (Nakhaeizadeh et al., 2014). It is important, however, to emphasize that the application of technical devices or automated systems does not in itself represent protection against biases. According to Dror, it is a misconception that technology, automation, or even artificial intelligence necessarily eliminates human biases, as these systems are designed, operated, and interpreted by humans; moreover, technical solutions themselves can carry built-in biases (Dror, 2020). In Hungarian practice, instances have also occurred where a forensic expert failed to examine alternative explanations independent of the investigative lead with sufficient thoroughness. In a specific case, according to the first experts, the time of death could have occurred at times ranging from 16:42 until 06:00 the following morning. Based on this, the court placed the onset of death at 17:00, even though several pieces of evidence (for instance, a toilet flushed at 21:10, a shower used around 23:00–24:00) made a later presence at the scene probable. This was problematic because the defendant could only have been the perpetrator if the time of death was this early, given that at 21:10 (and continuously thereafter) he was verifiably at another location. The Curia recorded that „calculating" the time of commission in this manner would hold true only if the defendant were the perpetrator. Otherwise, the act could have occurred significantly later, when the defendant was already verifiably elsewhere. The case ultimately ended in an acquittal due to the lack of proof „beyond reasonable doubt" (Fázsi, 2023). The bias here was a typical case of the context effect and top-down information processing: the expert adjusted their professional conclusions to the existing theory without systematically excluding alternative possibilities (Dror et al., 2005). Studies conducted in the field of dactyloscopy demonstrated that experts were more likely to be biased if they obtained different types of contextual information (Dror, Charlton & Péron, 2006). In forensic anthropology, empirical studies regarding cognitive biases confirmed the presence of confirmation biases experienced in the evaluation of sex, ancestry, and age at death when preparing a biological profile (Nakhaeizadeh, Dror & Morgan, 2014). Unreliable and domain-irrelevant information can lead to biased interpretations during the on-scene investigations of fires as well (Bieber, 2012). But problems can arise even in connection with DNA analysis, which is considered near-infallible, particularly in the case of mixed DNA samples. A good example of this is the 1998 Josiah Sutton case, where the result of the DNA testing was erroneous because the expert subconsciously wanted to demonstrate a match (based on a flawed victim eyewitness testimony/identification), and it later came to light that his analysis was incorrect. During DNA analysis, we frequently encounter incomplete or partial DNA profiles, and it is often difficult to interpret these profiles, as well as to determine the number and identity of contributors present in the mixed sample. Therefore, if a DNA analysis expert assumes that the defendant's DNA could have resulted in the observed profile, this can potentially increase the analyst's confidence that the defendant contributed to the sample. Simultaneously, they may ignore and/or fail to identify possibilities by which the exact same data could have been generated if the defendant had not contributed to the sample (Thompson, 2009). Dror and Hampikian's study on DNA analysis proceeded from a mixed DNA sample of a group sexual assault. DNA experts analysed the complex DNA mixtures and concluded that the evidence supported the guilt of the defendant identified by a co-defendant cooperating in a plea bargain. In their prior conclusion, the DNA experts found that the defendant could not be excluded based on the mixed DNA sample. Dror and Hampikian presented the exact same DNA mixture to 17 neutral North American DNA experts without disclosing contextual information or the background of the case. Only one expert agreed with the original examination, four DNA experts graded the sample as inconclusive, and 12 excluded the defendant in question (Dror & Hampikian, 2011). Part of the proposals aimed at minimizing cognitive effects and preventing the double counting of evidence suggests the separation of different laboratory functions, meaning their assignment to different persons. One proposal is the creation of evidence and quality managers who would operate as highly trained professionals within evidence handling units. Their main tasks would include filtering out domain-irrelevant information, formulating the least suggestive questions, and coordinating the forwarding of evidence to the appropriate department (Saks et al., 2003). Another potential solution proposed for improving the accuracy and decision-making of match-testing methods applied in forensic sciences (such as DNA analysis and dactyloscopy) is the filler control method. In such cases, experts are provided with at least three samples for comparison: the scene sample and the suspect's sample are augmented with a control sample. The expert must determine which matches which, and does not know which is the sample of the person subject to the proceedings (Wells, Wilford & Smalarz, 2013). This protects examiners from effects arising from the context (Saks et al., 2003)

Witness Testimonies and Confirmation Bias

The memory of witnesses is highly vulnerable and, according to psychological research, can easily be influenced by the statements of others, the media, or the method of interrogation itself (Wells et al., 1998). In the case of confirmation bias, this manifests as a tendency for the witness to align their memories with their own presuppositions or the narrative suggested by the interrogator. Not to mention that a reward for information can also easily incentivize a witness to provide a testimony that does not necessarily correspond to reality.

Defence Counsel Confirmation Bias

The task of the defence is the maximum protection of the rights of the person subject to the proceedings; however, defence counsel can also be exposed to confirmation bias – particularly if they believe too deeply in the innocence of the person subject to the proceedings. This can lead to the defence counsel ignoring certain pieces of evidence or underestimating their significance if they do not fit the defence strategy. It is a frequent case when defence counsel builds their strategy on a small amount of evidence that confirms the innocence of the defendant, while failing to file motions to acquire other potentially exculpatory evidence. In such instances, it can easily occur that the defendant is convicted based on the remaining incriminating evidence, whereas further exculpatory evidence could have been obtained. Defence counsel often lack fundamental knowledge regarding the operation and internal limitations of expert examinations. Therefore, without appropriate training, they are frequently unable to recognize the impact of expert confirmation bias on the interpretation of data and examination results (Fletcher, 2006).

Confirmation Bias and the Defendant

Paradoxically, defendants are also prone to confirmation bias, particularly when it comes to their own innocence or minimizing their guilt. This can manifest in the defendant emphasizing details that support their innocence when recalling events, while concealing or downplaying incriminating facts. It has also occurred that the defendant feels they must provide an alibi at all costs, and due to the false alibi, they lose their credibility. Confirmation bias can therefore affect every participant in criminal proceedings, not merely the authorities. The biases of experts, witnesses, defence counsel, and defendants combine to significantly increase the risk of wrongful convictions. Recognizing and managing such biases is only possible if debiasing techniques, such as the role of the „devil's advocate," blind examinations, and the systematic consideration of alternative scenarios, are consciously applied at all stages of the proceedings.

The Lessons of the Mór Bank Robbery in the Light of Confirmation Bias

The Investigative Stage

On 9 May 2002 around noon, two men burst into the Mór branch of the ERSTE Bank and killed eight people, for reasons that remain unknown to this day. The bank robbery claiming eight fatal victims is unparalleled in the history of Hungarian criminalistics (the act is hereinafter referred to uniformly as a bank robbery, regardless of its correct statutory classification). The perpetrators fled with a total booty corresponding to 7,356,481 forints. The competent organs of the police arrived at the scene almost immediately after the event, following notification by the father of one of the victims, who found it suspicious that the bank branch had suddenly closed citing technical reasons and that the silence inside was striking. Stepping up to one of the windows, he then noticed a bullet hole (Bicsérdi, 2013). A few months after the commission of the crime, Ede Kaiser and László Hajdú were apprehended, who were then definitively convicted of the bank robbery in 2005: Ede Kaiser received actual life imprisonment, while László Hajdú was sentenced to 15 years in a penitentiary. A few years later, in 2007, a collector found weapon parts in a forest not far from Tatabánya. These recovered accessories bore a suspicious resemblance to the weapons used in the bank robbery. The investigation was reopened, and the actual perpetrators, László Nagy and Róbert Weiszdorn, were subsequently apprehended. Following this, during the retrial proceedings, Ede Kaiser and László Hajdú were definitively acquitted in the case. What actually happened in Mór, and why it was necessary to kill eight people before making any demands during a bank robbery, we will never know, since László Nagy hanged himself in prison. And it is very difficult to provide an answer to the question of why the real culprits were not convicted in 2005. Investigators were led to Ede Kaiser and László Hajdú by the witness testimony of Attila Kiglics, which was later ostensibly supported by the testimonies of other witnesses present at the scene as well. During lineups for identification, a few people thought they recognized Ede Kaiser (even if not with sufficient persuasive force). Throughout the proceedings, it was observable that the authorities sought to confirm the suspicion based on the witness testimony of Attila Kiglics, gathering evidence that strengthened the guilt of Ede Kaiser and László Hajdú, while continuously ignoring evidence that would have strengthened another hypothesis (or indicated that the defendants did not commit the crime). The Mór case is thus a textbook example not only of *justizmord* but also of confirmation bias. The question may arise as to what leads a witness to provide a factually false testimony. In a good portion of cases, the reason for this is not that the witness intentionally wants to give false testimony. Certain pieces of information fade over time; thus, for instance, the witness frequently remembers the appearance of the person subject to the proceedings differently, which can often be misleading from the perspective of the investigation. Understandably, the witness cannot always remember properly because they did not consider it important at the time of commission, or it did not seem suspicious to them. Helpful witnesses frequently err in such cases because they want to remember so intensely that they often magnify minor details while assigning no significance to other important facts. The situation is different in the case of a victim, who will more than likely remember precisely the appearance of the perpetrator or the time of commission, especially in the case of a violent crime. This becomes so fixed in their memory that they may never forget it in their lifetime. This is termed a „flashbulb memory"; when someone experiences a shocking, emotionally powerful event, they can usually recall precisely where they were, what they were doing, who they were with, how they found out about it, etc. (this was demonstrated, for instance, in connection with the 2001 terrorist attacks) (Brown & Kulik, 1977). It is, of course, another question how the victim's brain attempts to suppress memories associated with the crime. Mention must also be made of those witnesses who possess information relating to concrete facts, such as the name of a girlfriend or a telephone number. Characteristically, these witnesses do not err in respect of this information (unless they intend to mislead the authority). Naturally, there can be many other factors influencing witness testimony. These are presented in Table 1.

Table 1.
Factors Influencing Witness Testimony

OBJECTIVE (external, independent of the witness)			**SUBJECTIVE (internal, dependent on the witness)**		
perception		**retention**	**biological**	**psychological**	**sociological**
OBJECT	MODE	CONDITIONS	PHYSICAL characteristics	PSYCHOLO-GICAL traits	SOCIAL circumstances
action	vision	intensity	age	emotion	group affiliation
person	hearing	post-event influences	sex	attention	occupation
space-time (speed)			sensory impairment	intelligence	upbringing
speech				expertise	

Note. Tremmel, Fenyvesi & Herke, 2005.

At the beginning of a case, multiple versions are established based on the available information. As time passes and evidence accumulates, the concept develops accordingly. It may become increasingly clear what actually happened, and therefore the concept can also change. During an investigation, one must never build upon a single notion and cling to it rigidly, because the consequence of this can be confirmation bias, and ultimately even *justizmord*.

Unfortunately, the Mór case is a perfect example of this. Due to the eight fatal victims, not only did the authorities want to solve the case as quickly as possible by all means, but the pressure of public opinion was also immense. And it may be that with greater attention, it should have been visible right away that the line along which the investigation started was fundamentally flawed. However, this flaw was not conspicuous, since those pieces of evidence and data that supported the given notion became important. Everyone glossed over the other, perhaps more important details, and they did not even look for a different kind of possibility.

The witness testimony of Attila Kiglics initiated a line in the Mór robbery that excluded the possibility of forming another concept. There were quite a few witnesses to the Mór bank robbery; however, they also supported this viewpoint, and there was not one who remembered the man standing in the doorway differently, or who – even if not at first – did not select Ede Kaiser during the lineups for identification. From then on, the investigation proceeded further in this direction, and the evidence supporting this version was reinforced. The possibility of another concept did not even arise, or if it did, no significance was assigned to it, because the uncovered evidence verified the roles of Ede Kaiser and László Hajdú. Nobody cared that the witness testimony in itself was insufficient, and that there were no usable material remains yet either. Perhaps the witnesses also wanted to recognize the perpetrator so intensely that they selected Ede Kaiser, or they wanted to be over with the many questions so badly that they designated him. If there had been a usable fingerprint, or if the weapons had been recovered, or perhaps if a survivor had remained, everything could have turned out differently.

Confirmation bias can be detected very well in the Mór case. Since the investigation was conducted along only one notion, questions that supported the given version were preferred during the interrogation of witnesses, and important and real questions were neglected because they would have supported another version. In the Mór case, a very good example of this is the height of Ede Kaiser. The majority of the witnesses described the perpetrator as being 180–190 cm tall. Ede Kaiser was 178 cm tall, and the shot security guard was not taller than 180 cm either, although the majority of the witnesses described him as shorter than this. Everyone remembered a strikingly tall person who rather approached 190 cm, and several people also made mention that they had to tilt their heads back considerably to look up at the man. They also stated that the perpetrator was much taller than the real guard, who was actually of identical height to Ede Kaiser. This contradiction could easily have been verified during a lineup for identification, but it was not ordered, as they did not want to acquire any piece of evidence that would refute the original version.

The concept regarding Ede Kaiser was not reinforced easily by chance. Although it was subsequently proven that he did not participate in the Mór bank robbery, he committed countless other, similar property offenses alongside it. From the end of the 1990s, currency exchanges became his favorite targets. At this time, he did not yet apply particular violence; rather, artful thefts were characteristic of him, and then it gradually turned in the other direction, when violent action, attacking the victim, or even threatening with a firearm or using it no longer represented an obstacle (Bicsérdi, 2012). Apart from the Mór case, the court found Ede Kaiser guilty in ten instances in connection with minor or major offenses. In these cases, he generally worked with the same people. Prior to his apprehension, however, he neglected the others a few times and committed offenses jointly mostly only with László Hajdú, but he wanted to involve Attila Kiglics nearly always. Perhaps due to László Hajdú's propensity for violence, Ede Kaiser could have changed direction and become a more violent criminal himself, although according to his account, neither he nor László Hajdú was of a violent character. According to the account of Attila Kiglics, he backed down multiple times because Ede Kaiser became excessively violent, even if he lost out on the larger revenues. These personal grievances and the reward for information could also have played a role in Attila Kiglics turning to the investigative authority. It was not difficult for him to piece together the details. According to his account, there had been talk between them previously about robbing the bank in Mór. Ede Kaiser could have held a preliminary reconnaissance of the terrain through his girlfriend in Mór, László Hajdú understood weapons, and last but not least, Ede Kaiser's situation suddenly improved following the bank robbery, and he settled his debts. From these facts and from the assumptions that Attila Kiglics spun further, the witness testimony was born that set not only the police but also the prosecution service and the court on the wrong track regarding the Mór case.

Ede Kaiser was delivered into the hands of the police by Attila Kiglics. Attila Kiglics sent a message to the investigative authority through his lawyer (since he himself was currently at large) stating that he was completely certain that Ede Kaiser and László Hajdú committed the Mór bank robbery. This information put everyone in a state of excitement, since following a relatively long, unsuccessful investigation, there was finally a tangible person (two people). There appeared a witness who knows the potential perpetrators, who committed various robberies together with them, and supports his assumptions with no ordinary reasons. The smaller part of Attila Kiglics's statement consisted of concrete facts by which Ede Kaiser and László Hajdú could be linked to Mór, whereas the larger part was merely assumptions drawn from the circumstances. Such concrete facts were the following:

1) The sudden change (improvement) in the financial situation of Ede Kaiser. In his witness testimony, Attila Kiglics said the following about this: 'The reason I think Ede pulled off the job is because I know him. I know that before the offense he had no money, yet a few days after the events he suddenly had a new watch, a gold necklace, a bracelet.' (Kovács, 2009). Attila Kiglics's conclusion was otherwise correct from the perspective that the sudden money originated from the commission of an offense. However, neither did he think about the fact that this wealth was not necessarily from the Mór bank robbery, nor did the authorities look into it. Indeed, at this time, Ede Kaiser carried out the robbery of an Austrian currency exchange, in which he otherwise wanted to involve Attila Kiglics as well, but he did not undertake the foreign trip due to the warrant out for him, so Ede Kaiser carried out that offense with László Hajdú. Attila Kiglics did not possess concrete evidence that Ede Kaiser actually obtained wealth from the Mór bank robbery; he could only infer this from the remaining information supporting it. This is a good example showing that the phenomenon of confirmation bias can appear not only within the authorities but even within witnesses: although Attila Kiglics knew about the Austrian robbery plan as well, and also that they planned to commit it likewise around this time, it did not arise in him that the improvement in Ede Kaiser's financial situation was the consequence of this successful Austrian robbery; instead, he adjusted it to his prior notion. Of course, it cannot be ruled out either that he 'forgot' about this possibility in exchange for the reward due to the informant. When Attila Kiglics found out about the Mór bank robbery from the media, it did not even arise in him that it had been committed by Ede Kaiser; he indicated it to the police only two months later. The majority of the information that supported for him that Ede Kaiser and László Hajdú were the perpetrators was available to him immediately after the commission and did not arise later. To the question of why he did not testify earlier, obviously many kinds of explanations could be given: Ede Kaiser was his associate and his friend, therefore he did not want to blow the whistle on him, perhaps he was afraid of something, or he did not know about the reward for information previously. According to Attila Kiglics's account, he never asked Ede Kaiser whether he was there at the Mór bank robbery, because according to him, it operated as a type of etiquette among them that they did not speak about each other's jobs.

2) The second fact in Attila Kiglics's statement was the girlfriend in Mór, to which the third important factor, the planning of the bank robbery, is closely linked. Ede Kaiser did not have a long relationship with the girl in Mór, but it was just enough for the ERSTE bank branch to catch his eye during his stays in

Mór. Ede Kaiser could thus map out the bank, the robbery of which he brought up at the same time as the robbery planned against the Csepel No. 2 Post Office, among others to Attila Kiglics as well. Alongside the Csepel post office robbery, the bank in Mór already appeared as an alternative. Otherwise, during the proceedings, Ede Kaiser did not even deny that he planned to rob the bank branch in Mór. He had the opportunity to become acquainted with the place and to thoroughly observe the operation of the bank branch. However, the fact that Ede Kaiser had a girlfriend in Mór and could assess the terrain during his stays in Mór does not prove at all in itself that Ede Kaiser committed the Mór bank robbery on 9 May 2002. The girl was only a girlfriend from the past with whom his relationship lasted only a few months and had already ended in 2000, and the offense was committed in 2002, two years later. The robbery of the Csepel No. 2 Post Office was in 2001. The discrepancies in time are large, and although the star witness could rightly think that his former friend indeed committed the Mór offense, the question of the passage of time raises a severe problem. Why would Ede Kaiser have waited two years, when during this time he could have executed the Mór bank robbery multiple times? The doubt can also arise as to why Ede Kaiser would have gone back to Mór, since not a few people could have seen him there two years before the murder, and therefore they could have easily recognized him. He circulated conspicuously and had the same vehicle: it is not probable that his acquaintances in Mór forgot the M5 BMW, and the girlfriend's environment could also have remembered him; consequently, it is not reasonable that he would have risked his exposure. Approaching the matter from the other side: the bank robbery was committed in disguise, and it is not excluded either that if he appears with a different exterior, the majority of people would not have recognized him after two years.

In fact, apart from these concrete points, nothing was available that would have indicated that Ede Kaiser could have had anything to do with the Mór bank robbery. From this it is also visible that Attila Kiglics's witness testimony is based not on facts, but the image that came together within him provides the complete story, and it was the job of the investigative authority to find the evidence that confirms the assumption that Ede Kaiser and László Hajdú committed the crime. The remaining part of Attila Kiglics's statement was indeed based on his own assumptions and not on concrete facts. Such assumptions were the following:

a) Ede Kaiser's conduct after the Mór bank robbery.
b) Ede Kaiser's nervousness and drug use.
c) The question of the mobile phone and vehicle.
d) László Hajdú's role.
e) Ede Kaiser's external appearance.

ad a) After the bank robbery, Attila Kiglics spoke with Ede Kaiser on the phone, and they also met in person. According to Attila Kiglics's account, following the Mór bank robbery, Ede Kaiser went into a video rental shop to Attila Kiglics's partner and said that Róbert Farkas and Szilárd Horváth did not commit the murder (as this assumption had spread in the press at the time). Not long after this, Ede Kaiser called Attila Kiglics. According to Attila Kiglics, the telephone conversation was a type of 'groping conversation,' meaning that Ede Kaiser assessed how much Attila Kiglics might know, but they did not utter a word about the bank robbery. This was crowned by the fact that, according to Attila Kiglics, during a meeting Ede Kaiser brought up that they should kill László Hajdú and his girlfriend because they know too much. These data can support that Ede Kaiser is the perpetrator of the Mór bank robbery, but if we view them independently of this, it is visible that they can also be evaluated autonomously. Indeed, if the baseline assumption had not been that Ede Kaiser committed the bank robbery, these data could still have been evaluated. Let us assume that Ede Kaiser obtained knowledge that the offense which he also planned years before had been committed. Obviously, the question arose in him as to what his associates with whom he planned it think about this. In this case, he likewise maps out what they might know about the commission, and whether they committed the previously jointly planned offense (since he knew that he was not the perpetrator). Based on the etiquette between them related by Attila Kiglics, Ede Kaiser could not ask straight out whether it was them, therefore this groping conduct is justified in this case as well. That is, these facts were evaluated to the detriment of Ede Kaiser precisely due to confirmation bias, since if there had not been the presupposition that he is the perpetrator, it would not even have arisen that these verify his guilt. Moreover, the fact that Ede Kaiser brought up with Attila Kiglics that László Hajdú and his girlfriend should be killed absolutely does not substantiate that they committed the crime. If it had been so, then they should have killed precisely Attila Kiglics for knowing too much, and not involve someone into the matter who was not even there at the time of commission. This is a typical case where, due to confirmation bias, facts speaking precisely in favor of the person subject to the proceedings are evaluated to his detriment.

ad b) In May 2002, Ede Kaiser was visibly using drugs and was nervous, which reinforced the suspicion in Attila Kiglics even more. In his statement, Attila Kiglics said: 'And it was also visible on him that he is terribly nervous. For two weeks continuously he was snorting. By this I mean that he used cocaine, two-three grams daily, and did not stir from home [...] He also exchanged his phones, and then two weeks after the crime bought that less conspicuous Volvo

C70 in which he currently circulates. My birthday is on 20 May. I am certain that if this Mór case had not happened and he were not its perpetrator, he would have come out to congratulate me. But since he suspects, I think, that I think it was them, he did not visit me.' (Kovács, 2009). Based on their friendship, breaking the etiquette between the two of them, Attila Kiglics could have inquired about the reason for Ede Kaiser's nervousness, from which it would have quickly turned out what caused Kaiser's tense daily life. According to Attila Kiglics, the cocaine joined the nervousness. Attila Kiglics saw Ede Kaiser in a drugged state after May 2002, from which he could think that something must have happened that he cannot get over without the help of cocaine. Together with the circumstances mentioned so far, a picture believed to be real began to come together logically in Attila Kiglics's head, but nothing tangible was available to him that would have actually substantiated his assumptions. These facts, however, substantiate nothing. Ede Kaiser could have been nervous precisely due to another committed offense, for other private reasons, but precisely also because he knew that several people know that he previously also planned to rob the bank branch in Mór, and now that someone committed this in such a brutal manner, he can easily come into the picture as well.

ad c) The question of the mobile phone and vehicle is already a more concrete starting point. For the sake of concealment, a criminal attempts to change his appearance so far if his name can come up in connection with such a prominent offense, and especially if he could be tracked based on the phone. The call log and cell information can provide an appropriate basis for someone to be linkable to a given offense. Róbert Farkas and Szilárd Horváth came into consideration as potential perpetrators in Mór also because Szilárd Horváth's phone hit the Mór transceiver tower in May 2002. Compared to this, neither Ede Kaiser's nor László Hajdú's mobile was there at the given time; neither phone was there near Mór when the bank robbery occurred. Although under normal circumstances this would be an exculpatory circumstance, confirmation bias stepped in here as well: they did not say that this fact supports that they are probably not the perpetrators, but brought up that they certainly had another phone, for which there were otherwise no data at all. The situation is the same with the vehicle. Ede Kaiser's car was not seen near the Mór bank robbery. This should have been a piece of evidence in favor of the person subject to the proceedings, but based on confirmation bias, the assumption was born that he certainly replaced his car. Attila Kiglics related that Ede Kaiser paid off all his debts, including the lease among others. Why would he have had to replace a car that became definitively his? Moreover, his acquaintances in Mór did not know his new car yet, and according to the assumption, he did not buy a car of a higher or similar category, but a less conspicuous one.

ad d) Attila Kiglics had even less information to the effect that Ede Kaiser's partner at the time of commission was László Hajdú. According to the assumptions at the time, there were two perpetrators in Mór: one who stood in the doorway and one who shot everyone, although it was not excluded either that a third person assisted in the robbery. Attila Kiglics could not imagine anyone else alongside Ede Kaiser than László Hajdú: 'When Kaiser started coming forward with these smart ideas that let's rob an armored car, a bank, and we rejected this, he started orienting towards Hajdú. From this I also think that he committed this offense with him as well; why would Hajdú have gone to commit a burglary when he received special training in such weapon things in the Legion? The other thing is the silencer. Hajdú, I know exactly, is crazy about silencers. Whatever weapon he had so far, he had a silencer for all of them, meaning they were quiet weapons [...] Previously he had a Parabellum type pistol [...] and a Scorpio submachine gun as well [...] I saw the Para with him myself; Ede told me about the Scorpio [...] I saw a silencer with him personally multiple times.' (Kovács, 2009). It turns out from the statement that Attila Kiglics did not like László Hajdú due to his violent nature. Since Ede Kaiser also leaned towards violence and Attila Kiglics was not a partner in this, putting together the minor details, Attila Kiglics's conclusion seemed sound that Ede Kaiser could have committed the Mór bank robbery with László Hajdú. Although no evidence substantiated this notion of his, Attila Kiglics inferred this only from Ede Kaiser's behavior and László Hajdú's background in the Foreign Legion. It was also an important factor for Attila Kiglics that while anyone can learn to handle a weapon and one does not need to enlist in the Legion for that, not everyone keeps a Scorpio submachine gun and a silencer at home. Neither is an everyday piece, not only among average people but even within criminal circles. Attila Kiglics knew that the weapon of the perpetrators in Mór was a Scorpio among others, and during the time of the massacre nothing could be perceived of what occurred in the bank, therefore the use of a silencer was assumable. From these facts he put together that László Hajdú was Ede Kaiser's partner. Now that we know that it was not them, it is visible on what weak foundations this excessive conclusion stood, which the investigators wishing to produce a perpetrator by all means easily accepted. In the case of László Hajdú, the search (in the terminology of the time, house search) yielded no results, firearms were not recovered, and identification failed to take place. This, however, did not disturb the authorities; they considered Attila Kiglics's account sufficient for proof.

ad e) Attila Kiglics concluded his statement with the following: 'I can tell you why they can be the perpetrators. The fact that Ede stood out there in the doorway like a security guard and sends away in complete cold blood people who want to come in, with his tanned skin, in his elegant clothes, this is typically him. If you see him, you will experience that his wardrobe is made up entirely of elegant fabric trousers, shirts, polo shirts; he walks around only in such gear.' (Kovács, 2009). Kaiser was indeed famous for his elegance, his vanity. He took great care of himself, took his clothes to be ironed, and always wore pieces fitting the fashion. On the day of the murder, a man dressed as a security guard sent away those wishing to enter the bank. This had to be a man who has presence and can be convincing, who has the courage to dismiss a man delivering a transfer order while people are being killed in the background. An elegantly dressed, tall man who shuffles along individuals wishing to arrange their immediate matters. This part of Attila Kiglics's statement is truly a subjective opinion. He probably deduced in his mind how Ede Kaiser stands there in the bank door. He knew their methods, their style, which was not like how the bank robbery occurred in Mór. Battery and attempted homicide can indeed be blamed on them, but mass killing was not characteristic. If everything proceeded according to plan and they obtained the booty, they moved on. They did not kill anyone in the case of the Csepel No. 2 Post Office either, even though multiple employees were present there. Attila Kiglics did not notice these details, or precisely due to confirmation bias (or in the hope of the reward for information) did not want to notice them. Yet he knew both Ede Kaiser and László Hajdú; he knew what they were capable of. Drawing the conclusion in itself that Ede Kaiser stood before the bank branch because he liked to dress elegantly, but failing to take into consideration that neither Ede Kaiser nor László Hajdú ever killed a person and their goal was always only the acquisition of booty, demonstrates how one-sided the evaluation of the available data was. This could lead to nothing else than *justizmord*.

In summary, therefore, it can be stated that the statement of Attila Kiglics in the investigative stage did not provide concrete evidence, only a starting line. It is certain that with his statement, many other offenses came to light, but unfortunately not the one toward which his statement was directed. Attila Kiglics's statement cannot be called false, since he did not lie; he brought facts and conclusions drawn from them to the knowledge of the police that were true. The trouble was that the statement and the data reported in it were overall not evaluated properly; the information was not looked into with full thoroughness, but instead they extracted from it only what supported the (flawed) presupposition.

In addition to Attila Kiglics's statement, there were further witness testimonies that (perhaps precisely due to confirmation bias) the investigative authority ignored or failed to verify. When the offense was committed, multiple witnesses spoke with the perpetrator standing in the doorway. One of the most prominent among these witnesses is the man who discovered the bank robbery itself. He was the one who notified the police after noticing that there were bullet holes in the side window of the bank and that the silence inside was striking. Before all this, he spoke with one of the perpetrators, since he wanted to go into the bank to his daughter and son-in-law to ask them for a little money, and he followed the two men for a while after they stepped out of there, meaning he could see and hear them from immediate proximity. He is the only one who met both individuals. According to his account, both perpetrators were young men around 25–30 years old; one was 185–190 cm tall, whereas the other was only 165–170 cm tall, and they departed the branch with a bag. In addition, one was dressed as a security guard, and the other wore worn jeans. The witness could not say whether the security guard seen previously was identical to the departing guard. His wife stated in a similar manner; she saw a man around 25–30 years old smoking a cigarette in front of the bank, and she described the man as stout, muscular, and having brownish-blonde hair.

The other material witness was the one who not only spoke but also interacted with the perpetrator, as he handed over a transfer order to him. The perpetrator took it and dropped it into the appropriate box. He likewise described the man as 180–190 cm tall, of thin build, white-skinned, with a thin arm and a feminine character, having an elongated and lean face, not wearing a hat or mustache, with a security guard uniform on him, and appearing calm and speaking with a beautiful 'Transdanubian accent'.

The next witness, who also spoke with the man standing in the doorway, described a 30–35 year old person, 180 cm tall, who had reddish-blonde hair and a Germanic appearance, and proved calm and strikingly polite. There was also a witness who saw the perpetrator without a hat, but the remaining aspects essentially coincided. The next witness repeatedly spoke with the person standing in the doorway; he also described him as 180–185 cm tall, of stronger-than-average build, and called his voice strange, since according to him the man spoke with a nasal twang.

A total of seven witnesses met and spoke with the perpetrator, in whom they thought they recognized a young man. The age was unanimous with nearly every witness, there are no significant discrepancies in the height either, and they agree on the attire as well. It could be taken for certain that a young, tall person dressed as a security guard stood in the doorway.

Based on these statements, the aforementioned person could even have been Ede Kaiser, but there were important moments that did not support his guilt. One is that there were multiple people who thought they saw a brownish-blonde person with a Germanic appearance, and according to descriptions, it was a man of stronger build. Ede Kaiser had brown hair and was not of stronger build. What also stands out is the allusion made to smoking. The man who notified the police and his wife saw a security guard smoking a cigarette, about whom they could not say whether he was the original guard or possibly another person. Ede Kaiser did not smoke, and the original security guard was not a smoker either.

The essence of these pieces of evidence from the perspective of confirmation bias is that although the witnesses describe the perpetrator as of a height, build, and hair color differing from Ede Kaiser, they did not deal with this at all during the verification. Likewise, they ignored that since neither Ede Kaiser nor the real security guard smoked, the perpetrator had to be someone else, since based on the witness testimony, the 'security guard' coming out of the bank lit a cigarette. This is a textbook example of confirmation bias: although the evidence clearly indicates that the perpetrator is not identical to the person subject to the proceedings, they preferred to ignore this evidence so that the suspicion could remain sustainable. They contented themselves with the fact that certain witnesses thought they recognized Kaiser from the arrays presented to them, or from among the persons standing behind the detective mirror.

However, a lineup for identification was not ordered for the purpose of checking the witness testimonies; they did not search for or check the DNA of the cigarette butts recorded at the scene, etc. Not to mention the 'identifying star witness' who, due to her agitation (and presumably her grief), wanted to recognize someone by all means, since she recognized Szilárd Horváth the first time, and later, when they told her that Ede Kaiser was the new suspect, she recognized him. First of all, Szilárd Horváth was shown to her, since at this time Ede Kaiser had not even arisen. The woman selected Szilárd Horváth. It is important that the media presented the pictures of the very first suspects, which the witness also saw. On the next occasion, Ede Kaiser and László Hajdú had already come into the purview of the police. The witness first participated in the identification of László Hajdú, where she selected an indifferent person first. The situation was similar in the case of Ede Kaiser, with whom she could not select a person on the first occasion, but at the second sequence selected Ede Kaiser from the set of his face and his height.

Another witness (the man with the transfer) stated on the first occasion that he did not see Szilárd Horváth or Róbert Farkas in the doorway. Upon the lineup for identification, he selected Ede Kaiser first, with the single discrepancy that according to him the perpetrator had longer hair. At the second selection, however, he could not choose between Ede Kaiser and an indifferent person based on either the voice, the forearm, or the face.

A third witness already wore strong dioptric glasses on the day of commission. Upon identification, she first recognized Szilárd Horváth and Róbert Farkas, but only because she saw them on television. Later, she did not select Ede Kaiser on any occasion.

Finally, there was a witness with whom they performed the identification based not on face but on voice. According to his claim, the culprit spoke with a nasal twang. Based on this, he first recognized an indifferent person, and he did not select Ede Kaiser during the personal identification either.

Following such uncertain identifications, the investigative authority drew the conclusion that Ede Kaiser was one of the perpetrators, and sent the files with a proposal for indictment to the prosecution service.

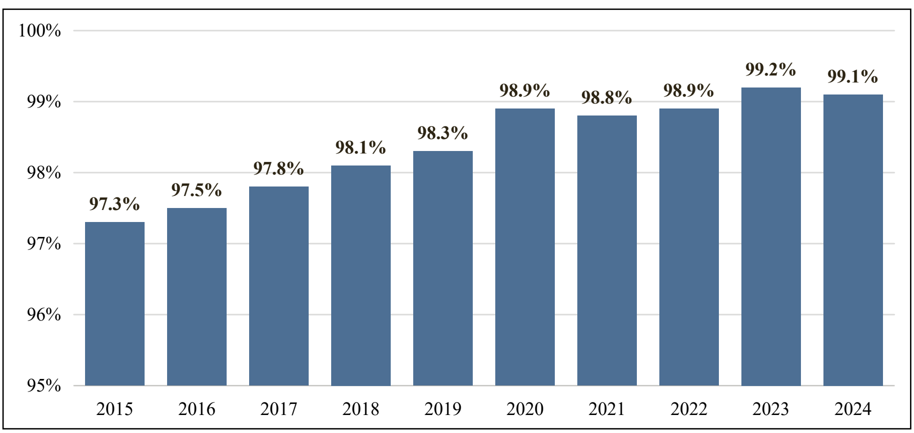
The Manifestation of Confirmation Bias During the Indictment Stage

The facts described in the indictment clearly refer to the substance of Attila Kiglics's statement. There are findings from which the conclusions drawn refer to the statement. The very first such historical element of the facts is the idea of robbing the bank, and the observations conducted to this end. It was known during the investigative stage as well that Ede Kaiser indeed entertained the idea of robbing the bank and brought this up with his associates multiple times. And holding a reconnaissance of the terrain was closely linked to the bank robbery. According to the indictment, Ede Kaiser conducted observations around the Mór bank branch not only in 2002, but prior to that in 2000 and 2001 as well: 'After the passage of one year, in October–November 2001, Ede Kaiser again began to seriously entertain the idea of robbing the Mór branch of the Erste Bank. He wished to involve Attila Kiglics in the plan again, to whom he offered the robbery of the Mór bank as an alternative to the Csepel post office robbery written under count V. Around this time, Ede Kaiser also conducted observations in the vicinity of the Mór bank branch; based on this, he also made it probable that they would be able to acquire 50–60 million forints in cash through the robbery.' (Fővárosi Főügyészség, 2002). It corresponds to reality that the Mór bank robbery featured as an alternative in Ede Kaiser's mind alongside the robbery planned against the Csepel No. 2 Post Office, but no evidence emerged in the case to the effect that Ede Kaiser held any reconnaissance in Mór a year after breaking up with his girlfriend. When he was dating the girl, he stayed in Mór more, but even then the bank branch was not the primary target, and since this possibility arose in Ede Kaiser only later, he could not have conducted a more thorough reconnaissance in 2000 either. The entire assumption of the indictment thus proceeds from the fact that the bank robbery was committed by Ede Kaiser and László Hajdú, and the existing (and non-existent) facts were adjusted to this. This is a textbook example of prosecutorial confirmation bias. The credibility of the assumption in the indictment regarding the amount is also questionable. For in order for someone to be so certain about the volume of turnover a given bank branch handles, they would have had to hold a very detailed and profound inspection, or would have needed an acquaintance who moved comfortably within the life of the given bank branch. After the breakup with the girl, Ede Kaiser had no connection remaining with Mór, so the second assumption can be dismissed, and for the first, no evidence was available. If it had truly been a question of such a large amount of money as the indictment mentions, that could already provide a reason to prepare more thoroughly and plan the robbery at length. Not a few things must coincide precisely, defining and planning everything in advance and, last but not least, acquiring weapons for an action of such magnitude; that is, a well-organized preparation is required. The indictment includes the preparation for the robbery: 'During the course of the year 2002, Ede Kaiser planned and prepared the robbery attack against the Mór branch of the Erste Bank no longer with Attila Kiglics, but with László Hajdu and at least one further associate in crime who remained unidentified during the proceedings. In order to maximally reduce the chance of exposure, Ede Kaiser and László Hajdu had already destroyed the clothing and weapon used for the prior offenses; therefore, the acquisition of newer weapons became necessary for the planned attack.' (Fővárosi Főügyészség, 2002). According to the indictment, this offense did not require particular financial expenditure, which is why they could choose this target instead of the Austrian currency exchange. The first half of the sentence is indeed correct, since regarding the finances, much more must be devoted to organizing an action abroad. The distance between Mór and Csepel, and Ede Kaiser's place of residence, is also a non-negligible aspect, which is considerably smaller than if they had traveled to Austria. The remaining parts of the preparation are also more easily solvable (the weapon does not have to be taken across the border, it is easier to flee, etc.). The reconnaissance of the terrain itself is substantially simpler at home. This line of reasoning may be correct, but in itself it is insufficient. It is not clear that Ede Kaiser would have given up on the Austrian currency exchange due to finances. He indeed had no money, but until then he had solved his necessary source of money somehow. And if he wanted to finance the robbery of the Austrian currency exchange from the Mór bank robbery, then it would not have been justified for him to spend so conspicuously (paying off his loans after the robbery, buying newer elegant clothes, using cocaine). The remaining parts of the preparation are also incomplete; for instance, the assumptions regarding the weapons do not form a completely clear picture either. According to the indictment, László Hajdú acquired the weapons through an 'associate relationship of Russian nationality who remained unidentified' (Fővárosi Főügyészség, 2002). The house search held at László Hajdú yielded no results regarding the weapons, so there was no evidence to the effect that László Hajdú actually acquired them, and even if he had acquired them, that they shot with them in the bank, or that he would have handed them over to Ede Kaiser. The casings found at the scene did not have their owner, even though it could have been verified with that that László Hajdú's weapons were not used in the bank robbery. The reconnaissance of the terrain – as another material momentum – also features in the indictment: 'Based on their prior observations, Ede Kaiser established that on Thursdays, around noon, the traffic of the surrounding streets and institutions is extremely slight due to the earlier closing times, and thus this period is the most appropriate for executing the robbery attack against the bank branch.' (Fővárosi Főügyészség, 2002). From the line of reasoning so far, the conclusion can indeed be drawn that if they prepared so thoroughly regarding the weapons, then the reconnaissance before the bank robbery could not have been omitted, since without it they would have undertaken a huge risk. However, no evidence was available to the effect that the defendants held any inspection in advance in 2002. It followed logically from the prior commissions that there was always preparation before the robberies, but this information is already rather a conclusion drawn from the prior statements, likewise a typical case of confirmation bias: if they always held a reconnaissance of the terrain before the robberies previously, then now as well (and this became part of the historical facts, although there was no evidence at all for this). Neither can it be known why they planned the bank robbery precisely for Thursday, since on any other day there could have been fewer people around the bank area around noon. If the defendants knew to such an extent that fewer people circulate in the town on Thursday, then they truly had to conduct reconnaissance, but not only on one occasion, but multiple times. The third person, whose identity remained unknown to the police, is also interesting, since no concrete data emerged for this; it served only to support the prior conclusions. This is a typical case of inverted logic: it was not that there were prior data showing there was a third person and they adjusted the conclusions to this, but they thought that there could have been a third person as well, and they adjusted the historical facts to this (although no evidence emerged for this).

The Judicial Stage

The presiding judge of the first-instance proceedings held a lecture at the University of Pécs, Faculty of Law after rendering the first-instance judgment. After the lecture, he related what convinced him of Ede Kaiser's guilt: when the defendant presented his alibi, he stated that at the time of the robbery he was having lunch at his girlfriend's at the time. The judge asked what he had for lunch, and Ede Kaiser replied that he had potato pasta. The judge related that he evaluated this in such a way that 'this also shows that he is lying, because how could he remember what he had for lunch then, therefore he is guilty.' This reasoning reflects precisely the logic of confirmation bias: they can interpret a neutral or even innocence-reinforcing circumstance in such a way that it verifies guilt. From a psychological perspective, this is a case of the reduction of cognitive dissonance and subjective selection of evidence, where prior conviction overrides the objective evaluation of facts (Festinger, 1957). In Hungary, according to the latest statistics, the rate of successful indictments is increasingly high.

Figure 1.
Prosecutorial Success Rate in Hungary



Note. URL1.

Based on this, it could even be said that confirmation bias is characteristic of almost all judicial stages, as courts almost always align themselves with the facts and evidence designated in the indictment. This, however, is rather just a peculiarity of the Hungarian system: the fact that in our country, the judicial stage is preceded by an extremely thorough investigation, and the prosecution service files an indictment almost exclusively when it is nearly certain of a conviction, predetermines the framework of the court proceedings. Despite this, it would be justified in numerous cases if courts viewed the indictment more critically.

In the Mór case, the court was also fundamentally determined by the testimony of Attila Kiglics. In the first-instance judgment, the following can be read: *'Undoubtedly, it is also the position of the court that, as the robbery of the Csepel Post Office also exemplified, the robbery of a financial institution – be it a Post Office or a Bank – does not necessarily and inevitably entail the killing of those working there. In the concrete case, the defendant and his partner, upon arriving at the Bank, essentially immediately opened fire on the persons staying there. What the concrete trigger for this was, the court was unable to deal with in the present proceedings. [...] At the same time, however, the court must proceed in its legal assessment from the premise that Ede Kaiser committed all the offenses adjudicated in the present case for the purpose of financial gain.'* (Fővárosi Bíróság, 2004).

Entering the bank, the perpetrators first shot the security guard, who probably acted threateningly towards them. Following this, one of them killed all those staying there, going through every room even before making a demand. This was not characteristic of Ede Kaiser, and Attila Kiglics knew this as well. In every single case, the demand occurred first; in Csepel, they could have shot anyone even before asking for the money. The judgment does not deal with what the reason could have been for shooting those staying there before acquiring the money. The resistance of the security guard is not probable to have triggered such an effect that everyone had to be killed, and even if they shot the guard, it is not certain either that fire should have been opened on the remaining persons as well. The court essentially accepted the prosecution's position and (as a typical example of judicial confirmation bias) did not even attempt to conduct evidentiary proceedings that would potentially refute the historical facts of the indictment (for instance, a lineup for identification regarding the stature of the security guard).

László Hajdú was named by Attila Kiglics during the investigative stage as one of Ede Kaiser's potential partners regarding Mór. His role, however, was clarified neither in the indictment nor in the first- or second-instance judgments. Initially, Hajdú was classified as a perpetrator, and later as a silent partner supplying weapons. The witnesses recognized Ede Kaiser (?) in the doorway, meaning that László Hajdú could not have been the man who sent the people away. And there is no evidence at all that he was the one shooting in the bank branch. The first-instance court did not find it proven that László Hajdú handed over weapons to Ede Kaiser, but neither that there was a third associate who remained unidentified. It is clear that someone else besides Ede Kaiser had to be in the bank, since killing and dismissing people at the same time was impossible. The judgment neither refutes nor reinforces that László Hajdú had anything to do with the Mór bank robbery. The evidence against him was none other than that around this time he possessed one or more Scorpio type firearms, similar to the one with which the robbery was committed. In addition, the testimony of Attila Kiglics spoke against him, according to which László Hajdú committed offenses together with Ede Kaiser.

In respect of László Hajdú, the court was already more skeptical than with Ede Kaiser: *'In the case, namely, that he had already used the firearm in question during the commission of some offense, it is on the one hand unnecessary to subsequently fire test shots, since the weapon has already proven once that it is functional.'* (Fővárosi Bíróság, 2004). According to the judgment, another possibility was that László Hajdú checked a newly acquired weapon in order to see whether it actually works. What is very material from the perspective of the weapons, and could have been a material turn regarding the investigation, is the casing, or casings, left behind. Such, however, did not exist, since László Hajdú probably picked them up.

In summary, it can be stated that Hajdú's guilt could cover only the supply of weapons, with particular regard to the fact that ultimately László Hajdú had a very strong alibi for the time of commission, since he lived in a semi-detached house, his own part of which he wanted to sell, and spoke on the phone with the prospective buyer precisely on the day of commission. The fact, however, that with this the testimony of Attila Kiglics was completely refuted (according to which Ede Kaiser and László Hajdú committed the offense together), did not alter the judge's conviction that Ede Kaiser was guilty. Neither did they attempt to clarify with whom he committed the offense in this case, nor did they resolve the contradiction that if László Hajdú did not participate in the commission at all, why it would have been necessary to kill him and his girlfriend as well.

The court did not even attempt to clarify the contradictions, for instance:

- What did the perpetrators do in the bank for nearly thirty minutes, while Ede Kaiser departed the scene very quickly at every offense?
- The perpetrators sprayed the camera and trampled the computer modem, which likewise was not characteristic of Ede Kaiser.
- Why did they depart with such a small amount of money, if according to the indictment Ede Kaiser observed a turnover of 50–60 million? (The perpetrators took away nearly 7,400,000 forints, leaving the large part of the money in the safe.)

A matter of particular interest is the role of the witnesses testifying during the investigation before the court. Not a little time passed between the testimonies given in court and during the investigative stage. Human memory fades, and far from barely remembering years back, certain memories can be hazy even after months. Compared to this, the majority of the witnesses not only maintained their testimonies before the first-instance court, but for instance the father notifying the authority even supplemented his prior testimony in court with the following, according to the first-instance judgment: *'From the entrance of the Bank he went to the right, and then when he turned back, he saw that the entrance door of the bank opens and a bag is thrown out from there, and then according to his knowledge it was Ede Kaiser who stepped out first.'* [...] According to the witness's account, he also saw that Ede Kaiser locked the door with his right hand and put into his pocket the key with which he locked.' (Fővárosi Bíróság, 2004).

According to the judgment, the witness thus concretely names Ede Kaiser, considers him a perpetrator, and no doubt arose in him to the effect that he possibly saw someone else departing the bank. This is already an explicit distortion, since the witness could not know that the perpetrator is called Ede Kaiser; he identified him only from the defendant's name. The court did not deal at all with the fact that the witness firmly saw Ede Kaiser locking the door with his right hand. Ede Kaiser, however, was left-handed, which does not exclude that he locks a door with his right hand, but it is less probable that he would have used his clumsy hand in such a dangerous situation. The court, naturally due to confirmation bias, completely ignored this.

The witness delivering the transfer also maintained his testimony. Before the court, he stated that the person he saw at the bank entrance was 15 cm taller than him. Ede Kaiser was 178 cm in height, while the mentioned witness was around 170 cm, but the court did not want to verify this either; it did not order the confrontation, even though from that it could have been easily determinable whether Ede Kaiser's height corresponds to the person seen by the witness. Obviously, the court was not willing to order this confrontation because it was feared that its result would contradict the historical facts of the indictment.

In the investigative stage, to the question of how Ede Kaiser imagined the robberies, the father of Ede Kaiser's girlfriend in Mór replied: *'They wipe out everyone in 5 minutes and get the money.'* (Fővárosi Bíróság, 2004). This testimony also supports that the method of commission was completely different from what was characteristic of Ede Kaiser, but the court did not take this into consideration either. At the same time, it is also true that at the trial the witness no longer remembered precisely the claim that Ede Kaiser told him he would wipe out everyone in five minutes. It is another matter that in this case the usual sentence from the court ('Is it possible that during the investigation you remembered even better?') was not uttered, since this statement could not be fitted into the concept followed by the court.

Surprisingly, Ede Kaiser had an alibi for the time of the Mór bank robbery. One of his former girlfriends, with whom they were together for two years, verified Ede Kaiser. Not only the girl, but her parents stood by him as well. All three persons testified both in the investigative and the judicial stages. On 9 May 2002, they were still dating, and they spent that day together too, breaking up only on 21 May. According to the girl's account, she did not go to school that day, and they spent the entire day together, and the girl was at home all week. On that day they got up around 09:00–10:00, then around 13:00–14:00 went to have clothes ironed, and at noon had lunch at home; the girl cooked potato pasta. She maintained this testimony in both stages. The first contradiction arose where, according to her records, she stayed home only on the 9th, participating in the classes on the remaining days. The next trouble, which was important, was why Ede Kaiser came forward with his alibi only after three months? And the third was his phone, which hit the Csepel transceiver tower multiple times on this day. These deficiencies could give reason for the court to draw the conclusion that the girl is testifying falsely, since too many contradictions arose in connection with her testimony. Thus, they did not look at the fact that she factually substantiates Ede Kaiser's alibi, but drew the conclusion that if the testimony is not correct in every detail, then the whole is false.

An even greater uncertainty arose in the testimony of the girl's parents. Both, however, remembered that Ede Kaiser was precisely eating potato pasta when they went to their daughter's. It is interesting that the confirmation bias mentioned at the beginning of the chapter determined the judge's consideration despite the fact that, independently of each other, every witness remembered the lunch.

A person completely independent of the family also substantiated Ede Kaiser's alibi. This person is the one to whom he took the clothes to be ironed with the girl. Ede Kaiser had a very good relationship with the ironing woman, with whose daughter he had dated previously, and frequently went to her to have trousers or shirts ironed. According to the woman's call log, she called Ede Kaiser at 14:05. The time factor is material since the bank robbery was committed at noon, and it is important where Ede Kaiser spent the afternoon. Ede Kaiser was with the girl at 13:00, then after this at some point they departed, and arrived at the ironing woman's 20–25 minutes before 14:00. According to the testimony, they departed a few minutes before 14:00, and following this the woman called Ede Kaiser at 14:05.

The telephone calls, the hits on the transceiver tower, and the issued invoice all verified Ede Kaiser's alibi; nevertheless, the court did not take them into consideration.

A further negative trace was that none of the DNA profiles found at the scene could be linked to László Hajdú or Ede Kaiser. In respect of the fingerprint, the search did not yield results either, even though the person standing in the doorway among the perpetrators lingered at the entrance for nearly 30 minutes, thus spending just enough time to potentially leave any trace behind. The primary source of traces was thus the door in this regard. The technicians examined the door in its entirety as well, but found no such usable fingerprint on it that verified Ede Kaiser's presence in Mór. Yet, if Ede Kaiser truly stood in the doorway of the bank branch, he touched the handle multiple times when opening the door to arriving clients who cooperated as identifying witnesses in the criminal proceedings, so his fingerprint and DNA should have been identified. None of the witnesses reported the wearing of gloves, which would have been striking on a security guard. And the first witness saw also how he locked the door, which conversely involved touching the handle. It is also inconceivable that if Ede Kaiser stood in the doorway for such a long time indeed, no scent or other biological remains would be left there. The court probably precisely due to confirmation bias failed to evaluate this myriad of negative traces. Otherwise, Ede Kaiser subjected himself to a polygraph examination too, with one condition: he is asked only about Mór. According to the result of the polygraph, he spoke the truth that he was not present in Mór at the time of commission, and he did not commit the Mór bank robbery. If the court had truly evaluated the evidence individually and in their entirety, then the call log in itself should have been considered an explicit alibi in the case of Ede Kaiser. It was proven that Ede Kaiser's phone was not near Mór on the day of commission, and did not hit the Mór transceiver tower. The ironing woman, conversely, spoke with him, so the phone was with him (the argument could not be that he left without a phone and that is why the device did not hit the Mór tower). One more person made mention that he spoke on the phone with Ede Kaiser around 11:00 on that day, but his testimony was not evaluated either

Conclusion

In the case of the Mór bank robbery, the statement of a single witness, Attila Kiglics, proved to be a decisive testimony, as it initiated a line of investigation and adjudication that, precisely due to confirmation bias, failed to put the actual perpetrators behind bars. Based on this testimony, a concept was developed against which conflicting evidence, no matter how frequently it arose, was ignored. Numerous methods have been elaborated in the literature to counteract the effects of confirmation bias; these are listed below.

1. Organizational-level prevention.

- Independent verification mechanisms: during the investigative and case-preparation process, it is advisable to involve an external lawyer or investigator who is not directly affected by the case to analyze the available evidence from a critical perspective (the 'devil's advocate' method), which forces the investigative authority and the prosecution service to also weigh alternative explanations.
- Application of blind procedures: during forensic and expert examinations, 'blind' or 'double-blind' methods can minimize the distorting effects of contextual information (for instance, during fingerprint or DNA identification, the examining expert should not know the identity of the suspect, the details of the crime, or the investigative lead).
- Rotation system: in longer-term investigations, the periodic rotation of investigators, prosecutors, and experts is advisable to reduce adherence to one-sided versions.

2. Procedural-level prevention.

- Mandatory examination of alternative scenarios: during the evaluation of criminal cases – whether in the investigative or the trial stage – the formal examination of alternative versions must be prescribed.
- Qualitative (not merely quantitative) evaluation of evidence: the key is not the number of pieces of evidence, but their relevance and reliability.
- Preference for open-ended questions during interrogations: during the interrogation of witnesses, victims, and suspects, suggestive questions must be avoided.

3. Personal-level prevention.

- Increasing cognitive awareness: during the training of investigators, prosecutors, judges, and experts, knowledge regarding psychological biases, including confirmation bias, must mandatorily be integrated, as the mere awareness of biases reduces their impact.
- Practicing the questioning of one's own position: decision-makers must regularly practice the so-called 'consider-the-opposite' technique, during which they systematically search for arguments against their own assumption.

- Use of objective evaluation checklists: predefined, standardized checklists for the evaluation of evidence can reduce decisions built upon intuition and prejudice.

4. Technological tools.

- Artificial intelligence-based verification systems: artificial intelligence is capable of the objective, statistically-based evaluation of a larger volume of evidence than human processing (it is important, however, that the algorithms operate transparently and do not generate new biases).
- Comparison of databases from multiple sources: comparing forensic databases (DNA, fingerprints, ballistic data) from multiple sources reduces the chance of a single, erroneous database identification determining the direction of the investigation.

Confirmation bias is one of the most significant, yet for a long time underestimated, risk factors in criminal justice. Theoretical psychological research and criminological experiences both demonstrate that people tend to seek out, interpret, and retain in memory information that confirms their prior assumptions, while underestimating or ignoring conflicting data. As Csaba Fenyvesi also regularly emphasizes in his lectures: 'One must think of everything, and even beyond that'. This bias can appear in all actors of criminal proceedings, from the investigative authorities through the prosecution service and the courts to experts and witnesses. Confirmation bias cannot be completely eliminated, but its impact can be significantly mitigated through the coordinated application of organizational, procedural, personal, and technological measures. In the Hungarian administration of justice, there is a realistic chance of reducing the number of flawed judgments by adopting and adapting international best practices. The lesson of the Mór bank robbery is that the fight against confirmation bias is not exclusively a matter of legislative amendment, but also a cultural shift in the application of the law. To achieve this, there is a need for the continuous training of the actors, the conscious reform of evidentiary practice, and for the presumption of innocence and the principle of deciding in favor of the defendant in case of doubt to truly prevail at all levels of criminal justice. Only in this way can it be achieved that severe errors such as those in the Mór case are not repeated in the future.

References

Anderson, C. A., & Kellam, K. L. (1992). Belief perseverance, biased assimilation, and covariation detection: The effects of hypothetical social theories and new data. *Personality and Social Psychology Bulletin, 18*(5), 555-563. https://doi.org/10.1177/0146167292185005

Arkes, H. R., & Blumer, C. (1985). The psychology of sunk cost. *Organizational Behavior and Human Decision Processes, 35*(1), 124-140. https://doi.org/10.1016/0749-5978(85)90049-4

Bicsérdi A. (2012). *A döntő tanúvallomás kettős szerepe a Móri ügy kapcsán*. Nemzeti Közszolgálati Egyetem.

Bicsérdi A. (2013). A döntő tanúvallomás kettős szerepe a Móri ügy kapcsán. *Magyar Bűnüldöző, (1-2),* 28-58.

Bieber, P. (2012). Measuring the impact of cognitive bias in fire investigation. *Proceedings of the International Symposium on Fire Investigation Science and Technology*. Presented at the International Symposium on Fire Investigation Science and Technology. University of Maryland.

Boston Bar Association (2009). *Getting It Right: Improving the Accuracy and Reliability of the Criminal Justice System in Massachusetts (Task Force Report).* Boston Bar Association, diciembre de 2009.

Brown, R., & Kulik, J. (1977). Flashbulb memories. *Cognition, 5*(1)*,* 73-99.

Burke, A. S. (2006). Improving prosecutorial decision making: Some lessons of cognitive science. *William & Mary Law Review, 47*(5), 1587-1632. https://scholarship.law.wm.edu/wmlr/vol47/iss5/3

de Keijser, J. W., & van Koppen, P. J. (2007). Paradoxes of proof and punishment: Psychological pitfalls in judicial decision making. *Legal and Criminological Psychology, 12*, 189-205. https://doi.org/10.1348/135532506X11872

Dror, I. E. (2020). Cognitive and human factors in expert decision making: Six fallacies and the eight sources of bias. *Analytical Chemistry, 92*(12), 7998-8004. https://doi.org/10.1021/acs.analchem.0c00704

Dror, I. E. (2025). Biased and biasing: The hidden bias cascade and bias snowball effects. *Behavioral Sciences, 15*(4), 490. https://doi.org/10.3390/bs15040490

Dror, I. E., & Cole, S. A. (2010). The vision in 'blind' justice: Expert perception, judgment, and visual cognition in forensic pattern recognition. *Psychonomic Bulletin & Review, 17*(2), 161-167. https://doi.org/10.3758/PBR.17.2.161

Dror, I. E., & Hampikian, G. (2011). Subjectivity and bias in forensic DNA mixture interpretation. *Science & Justice, 51*(4), 204-208. https://doi.org/10.1016/j.scijus.2011.08.004

Dror, I. E., & Kukucka, J. (2021). Linear Sequential Unmasking-Expanded (LSU-E): A general approach for improving decision making as well as minimizing noise and bias. *Forensic Science International: Synergy, 3*, 100161. https://doi.org/10.1016/j.fsisyn.2021.100161

Dror, I. E., Charlton, D., & Péron, A. E. (2006). Contextual information renders experts vulnerable to making erroneous identifications. *Forensic Science International, 156*(1), 74-78. https://doi.org/10.1016/j.forsciint.2005.10.017

Dulai P. (2020). A médiaerőszak által belobbantott tűz – Egy szexuális indítékból elkövetett sorozatgyilkosság kriminálpszichológiai szemszögből. *Belügyi Szemle, 68*(2), 103-113. https://doi.org/10.38146/BSZ.2020.2.7

Fázsi L. (2023). Húsz év fegyház helyett felmentés – Avagy a bűnösség rejtett vélelmének jelentősége az ítélkezésben. *Büntetőjogi Szemle, 15*(2), 12-20.

Fenyvesi Cs. (2014). A justizmordhoz vezető kriminalisztikai hibák. *Belügyi Szemle, 64*(3), 30-59. https://doi.org/10.38146/bsz-ajia.2014.v62.i3.pp30-59

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press. https://doi.org/10.1515/9781503620766

Findley, K. A., & Scott, M. S. (2006). The multiple dimensions of tunnel vision in criminal cases. *Wisconsin Law Review, 25*(2), 291-397.

Fletcher, C. (2006). *Every Contact Leaves a Trace: Crime Scene Experts Talk About Their Work from Discovery Through Verdict*. St. Martin's Press.

Herke Cs. (2021). Ártatlanul elítélve – A móri bankrablás tanulságai. *Erdélyi Jogélet, (3)*, 77-85. https://doi.org/10.47745/ERJOG.2021.03.06

Herke, Cs. (2025). In the trap of certainty: the role of confirmation bias in criminal justice. *Anuario de la Facultad de Derecho, (41),* 1-24. https://doi.org/10.17398/2695-7728.41.2383

Hirt, E. R., & Markman, K. D. (1995). Multiple explanation: A consider-an-alternative strategy for debiasing judgments. *Journal of Personality and Social Psychology, 69*(6), 1069-1086. https://doi.org/10.1037/0022-3514.69.6.1069

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In Gilovich, T., Griffin, D., & Kahneman, D. (Eds.), *Heuristics and Biases: The Psychology of Intuitive Judgment* (pp. 49-81). Cambridge University Press.

Kassin, S. M., Dror, I. E., & Kukucka, J. (2013). The forensic confirmation bias: Problems, perspectives, and proposed solutions. *Journal of Applied Research in Memory and Cognition, 2*(1), 42-52. https://doi.org/10.1016/j.jarmac.2013.01.001

Kerstholt, J. H. & Eikelboom, A. R. (2007). Effects of Prior Interpretation on Situation Assessment in Crime Analysis. *Journal of Behavioral Decision Making, 20*(5), 455-465. https://doi.org/10.1002/bdm.570

Klayman, J., & Ha, Y.-W. (1987). Confirmation, disconfirmation, and information in hypothesis testing. *Psychological Review, 94*(2), 211-228. https://doi.org/10.1037/0033-295X.94.2.211

Kovács L. (2009). *A Mór megtette*. Korona.

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108*(3), 480-498. https://doi.org/10.1037/0033-2909.108.3.480

Lidén, M., Gräns, M., & Juslin, P. (2018). Self-correction of wrongful convictions: Is there a 'system-level' confirmation bias in the Swedish legal system's appeal procedure for criminal cases? Part I. *Law, Probability and Risk, 17*(4), 311-336. https://doi.org/10.1093/lpr/mgy018

Mészáros B. (2021). A kriminalisztika hipotézisei. *Belügyi Szemle, 69*(10), 1771-1781. https://doi.org/10.38146/BSZ.2021.10.6

Mosteller, R. P. (2007). The Duke Lacrosse Case, Innocence, and False Identifications: A Fundamental Failure to 'Do Justice. *Fordham Law Review, 76*, 1337-1412. https://ir.lawnet.fordham.edu/flr/vol76/iss3/6

Mullin, C. (1997). *Error of Judgment: The Truth About the Birmingham Bombings*. The Mercier Press.

Nakhaeizadeh, S., Dror, I. E., & Morgan, R. M. (2014). Cognitive bias in forensic anthropology: Visual assessment of skeletal remains is susceptible to confirmation bias. *Science & Justice, 54*(3), 208-214. https://doi.org/10.1016/j.scijus.2013.11.003

Neisser, U. (1976). *Cognition and reality: Principles and implications of cognitive psychology*. W. H. Freeman.

Nemeth, C. J., Brown, K., & Rogers, J. (2001). Devil's advocate versus authentic dissent: Stimulating quantity and quality. *European Journal of Social Psychology, 31*(6), 707-720. https://doi.org/10.1002/ejsp.58

Nickerson, R. S. (1998). Confirmation Bias: A Ubiquitous Phenomenon in Many Guises. *Review of General Psychology, 2*(2), 175-220. https://doi.org/10.1037/1089-2680.2.2.175

O'Brien, B. (2009). Prime suspect: An examination of factors that aggravate and counteract confirmation bias in criminal investigations. *Psychology, Public Policy, and Law, 15*(3), 315-334. https://doi.org/10.1037/a0016908

Ross, L., Lepper, M. R., & Hubbard, M. (1975). Perseverance in self-perception and social perception: Biased attributional processes in the debriefing paradigm. *Journal of Personality and Social Psychology, 32*(5), 880-892. https://doi.org/10.1037/0022-3514.32.5.880

Saks, M. J., Risinger, D. M., Rosenthal, R., & Thompson, W. C. (2003). Context effects in forensic science: A review and application of the science of science to crime laboratory practice in the United States. *Science & Justice, 43*(2), 77-90. https://doi.org/10.1016/S1355-0306(03)71747-X

Schmittat, S. M., Englich, B., Sautner, L., & Velten, P. (2021). Alternative stories and the decision to prosecute: an applied approach against confirmation bias in criminal prosecution. *Psychology, Crime & Law*, *28*(6), 608-635. https://doi.org/10.1080/1068316X.2021.1941013

Szabó L. (1980). *13 bíró emlékezik*. Táncsics.

Thompson, W. C. (2009). Painting the target around the matching profile: The Texas sharpshooter fallacy in forensic DNA interpretation. *Law, Probability and Risk, 8(3)*, 257-276. https://doi.org/10.1093/lpr/mgp013

Tremmel F., Fenyvesi Cs., & Herke Cs. (2005). *Kriminalisztika – Tankönyv és atlasz*. Dialóg Campus.

Usher, G. (1990). UK Commentary: The Guildford Four: English Justice and the Irish Community. *Race & Class, 31*(3), 81-98. https://doi.org/10.1177/030639689003100305

Weinberg, S. (2012). Seeing is Believing, *The American Prospect*, 27 de noviembre de 2012. Accedido el 22 de enero de 2024. https://prospect.org/justice/seeing-believing/

Wells, G. L., Small, M., Penrod, S., Malpass, R. S., Fulero, S. M., & Brimacombe, C. A. E. (1998). Eyewitness identification procedures: Recommendations for lineups and photospreads. *Law and Human Behavior, 22*(6), 603-647. https://doi.org/10.1023/A:1025750605807

Wells, G. L., Wilford, M. M., & Smalarz, L. (2013). Forensic science testing: The forensic filler-control method for controlling contextual bias, estimating error rates, and calibrating analysts' reports. *Journal of Applied Research in Memory and Cognition, 2*(1), 53-55. https://doi.org/10.1016/j.jarmac.2013.01.004

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Legal sources applied

Budapest Regional Court, Judgment No. 4.B.343/2004/43.
Budapest Chief Prosecutor's Office, Indictment No. NF. 8853/2002/256-I.

Reference of the article according to APA regulation

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