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## **PROBLEMS OF ISSUING FORENSIC EXPERTISE IN THE CRIMINAL PROCESS AND THE ADMISSIBILITY OF SCIENTIFIC EVIDENCE ON THE EXAMPLE OF THE POLISH AND AMERICAN LEGAL SYSTEMS**

### **Summary**

The article reveals the problem of issuing forensic expertise against the background of the conditions for admitting scientific evidence in a criminal trial on the example of the Polish and American legal systems. Both of these issues provide a comprehensive account of the issuance of an opinion for justice: on the one hand, revealing the challenges faced by the person who performs the expert opinion, and on the other hand, by the trial authority that has to “introduce and evaluate” this evidence into the process.

**Keywords:** forensic expertise, scientific evidence, criminal trial, expert witness, trial authority

### **Introduction**

The purpose of this article is to show the problem of issuing forensic expertise against the background of the conditions for admitting scientific evidence in a criminal trial on the example of the Polish and American legal systems. Both of these issues provide a comprehensive account of the issuance of an opinion for justice: on the one hand, revealing the challenges faced by the person who performs the expert opinion, and on the other hand, by the trial authority that has to “introduce and evaluate” this evidence into the process.

At the turn of the 20th century, thanks to Hans Gross, later called the father of forensic science<sup>1</sup>, thanks to the development of the criminal process and new advances in technology, when it was noticed that the two could be combined for detection and evidentiary purposes, the science of forensic science was born<sup>2</sup>. At the beginning of the 20th century, the first forensic laboratories began to be established around the world<sup>3</sup>, usually at law enforcement cells.

The modern understanding of the concept of forensic science has evolved over the years. According to Tadeusz Hanausk, Forensics: “is the science of tactical principles and ways, as well as technical methods and means of recognizing and detecting legally defined negative social phenomena, especially crimes and their perpetrators, and proving the existence or absence of a connection between persons and events; and preventing crimes and other adverse but legally significant phenomena. This science also deals with strategies for the prediction and future recognition and combating of these phenomena, especially by preventing their emergence and development.”<sup>4</sup>. A more narrow definition is given by Pawel Horoszowski, who defined it as “a science [that] studies the ways and means of committing crimes and develops methods to detect a crime and to determine and apprehend the perpetrator of a criminal act”<sup>5</sup>, while Jan Sehn explicated the concept of forensic science as: “knowledge of deliberate tactical ways of detecting and securing traces, as well as the means and technical ways of their deliberate use in evidentiary proceedings to establish objective truth, especially in the crime-fighting episode”<sup>6</sup>.

Forensic science, as a practical science for trial purposes, uses research from a wide range of scientific disciplines combined with forensic science.

<sup>1</sup> A professor at the University of Graz published in 1893: *Podręcznik sędziego śledczego jako system kryminalistyki*. See J. Kasprzak (compilation and translation), H. Gross, *Podręcznik dla sędziego śledczego jako system kryminalistyki*, Difin, Warsaw 2021.

<sup>2</sup> E. Gruza, *Historia, przedmiot i zadania kryminalistyki*, in E. Gruza, M. Goc, J. Moszczyński (ed.), *Kryminalistyka, czyli rzecz o metodach śledczych*, Wydawnictwa Akademickie i Profesjonalne, Warsaw 2009, pp. 15-18. See R. Zdybel, *Funkcja wykrywcza i dowodowa postępowania karnego*, C.H. Beck Publishers, Warsaw 2016.

<sup>3</sup> The father of Polish forensic science is considered to be Władysław Sobolewski - an inspector of the State Police, who was for many years the head of the Forensic Laboratory of the Central Investigation Service of the KGPP in Warsaw. He was among the leading representatives of forensic science and collaborated with the greatest researchers of the time (H. Zoltowski, *The late Dr: Władysław Marian Sobolewski, P.P. inspector*, “Police Review” 1937, no. 6(12), pp. 402-404).

<sup>4</sup> T. Hanausek, *Kryminalistyka. Zarys wykładu*, Zakamycze, Kraków 1996, p. 14.

<sup>5</sup> P. Horoszowski, *Kryminalistyka*, Państwowe Wydawnictwo Naukowe, Warsaw 1958, pp. 13-14.

<sup>6</sup> Source: <http://kryminalistyka.prawo.uni.wroc.pl> (accessed: 1.06.2024).

Forensic experts carry out forensic expertise as part of their research, which serves as evidence in criminal proceedings.

### Types and characteristics of forensic expertise

The effectiveness of criminalization in criminal law depends largely on the proper handling of evidence<sup>7</sup>. In this regard, expert opinions are often the pillar on which all evidence is based.

Forensic research distinguishes between two basic types of research methods: quantitative and qualitative. Quantitative research involves various types of measurement apparatus analysis and statistical calculations and is characterized by high precision and repeatability. The expert to present the research should use the term: "I know". In the case of qualitative research, their basis is the senses and the knowledge and experience of experts, who should use the phrase: "I am convinced". Thus, the results of qualitative research may not be as conclusive as quantitative research<sup>8</sup>. The qualitative research group includes anthroposcopic, firearms, cheilosopic, dactyloscopic, phonoscopic, mechanoscopic, osmological, otoscopic, scribal, and traseological research<sup>9</sup>.

The appropriate test method is selected because of the characteristics of the identification features. This is because certain features exhibit significant instability, i.e., volatility or modifiability, or a low level of definiteness, which affects the identification process<sup>10</sup>. This leads to problems if the evidence is compared with the comparison material and a match is found between them. In addition, it prevents the use of statistical methods for evaluating the results of comparative studies. The immutability of traits is, unfortunately, an exception in forensic research (e.g., genetic testing), so the pursuit of objectivity of the identifications posed as a model seems not only a difficult task but even unrealistic to perform<sup>11</sup>.

<sup>7</sup> J. Moszczyński, *Wiarygodność dowodu z opinii biegłego*, in S. Pikulski, M. Romańczuk-Grącka (eds.), *Granice kryminalizacji i penalizacji*, ELSet, Olsztyn 2013, pp. 618-624. See M. Blonowski, M. Zbrojewska (eds.), *Dowody i postępowanie dowodowe w procesie karnym. Komentarz praktyczny z orzecznictwem. Wzory pism procesowych.*, 2nd edition, Wydawnictwo C.H. Beck, Warsaw 2021; M. Żbikowska, *Ciężar dowodu w polskim procesie karnym*, Wolters Kluwer, Warsaw 2019.

<sup>8</sup> Ibid.

<sup>9</sup> See E. Gruza, *Ocena wiarygodności zeznań świadków w procesie karnym. Problematyka kryminalistyczna*, Zakamycze, Kraków 2003; M. Kała, D. Wilk, J. Wójcikiewicz, D. Zuba (ed.), *Ekspertyza sądowa. Zagadnienia wybrane*, wyd. 4, Wolters Kluwer, Warsaw 2023.

<sup>10</sup> See Z. Czeczot, *Identification studies of handwriting*, Publishing House of the Department of Forensic Science of the Central Committee of the MO, Warsaw 1971.

<sup>11</sup> J. Moszczyński, *Wiarygodność...*, op. cit.

One of the most important for forensic science, and a breakthrough for the effectiveness of detecting perpetrators of crimes, was the discovery of a new method of human identification based on DNA profile analysis. This method not only enriched forensic science but also inspired “a reevaluation of previously developed standards and an impetus to seek new solutions within the classical methods of identification.”<sup>12</sup> Genetic identification has since made it possible to make precise calculations of either the probability or the reliability quotient of the results of DNA profiles compared with each other, which consequently represent a high degree of objectivity. All previous methods of identification, including fingerprinting - considered the “gold standard” - have lost their primacy of objectivity and scientificity<sup>13</sup>. Indeed, although dactyloscopic examinations show a high degree of objectivity, they can be objectified because of the two standards of identification that are distinguished: holistic and numerical. Even less objectivity characterizes other methods of identifying people and things<sup>14</sup>.

To test the validity and reliability of identification methods, an indicator is used, in the literature referred to as diagnostic value, which can be a percentage indication of correct test results obtained under a specific test method<sup>15</sup>. It can be expressed by the ratio of positive identification (the ratio of correct to incorrect identifications is then indicated) or negative identification (the ratio of correct to incorrect eliminations). In addition, diagnostic value can also be understood as the probability of making a correct decision about the identity of the identified objects.

### **Problems of opinion in forensic expertise**

Forensic traces have different characteristics (identifying features), which leads to the fact that it is not always possible to obtain fully objective test results. Often, therefore, the result of the study is based on the subjective assessment of the expert. Subjectivism in forensic research can express itself at the very stage of defining identification characteristics. The expert often decides based on his own experience and conviction whether and with how much probability there is a possibility that the trace originated from the object in question. In many areas of forensic science, as Jaroslaw Moszczyński rightly points out, the senses and the human mind are the basic

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<sup>12</sup> Ibid.

<sup>13</sup> See J. Moszczyński, *Daktyloskopia. Zarys teorii i praktyki*, Publishing House of the Central Forensic Laboratory of the Police Headquarters, Warsaw 1997.

<sup>14</sup> Idem, *Wiarygodność...*, op. cit.

<sup>15</sup> Ibid.

and irreplaceable research apparatus<sup>16</sup>. Research fraught with a great deal of subjectivity is inevitable in the current state of knowledge and the development of certain sciences. It also happens that in the case of identification, which has a high level of objectivity, it is not possible to obtain clear and certain results. The danger that undoubtedly arises from the possibility of subjective opinions is the use of this by untrustworthy individuals whose competence is questionable, but who have met the statutory conditions for starting an “expert business”<sup>17</sup>.

Identification studies based solely on the senses give rise to a high probability of erroneous findings, since “a person is not a machine operating according to a specific formula or algorithm.”<sup>18</sup>. Therefore, it is important that experts, in addition to their substantive knowledge and experience acquired through professional practice, have the right aptitude for qualitative-subjective research. It’s not just about physical attributes, such as “falcon” eyesight in dactyloscopic research or “absolute” hearing in phonoscopic research. They should also demonstrate the ability to concentrate, the ability to associate and combine facts, insight, reliability, responsibility, patience, accuracy, and finally the ability to verify their observations and interest in their field of research (constantly improving their competence and knowledge)<sup>19</sup>. The ability to use the expert’s work in the trial, his ethical qualities, and impartiality in the case are also important characteristics.

On the ground of research, especially subjective research, there is the concept of the so-called first impression effect. This is a very dangerous phenomenon that, although it should not, can occur to an expert during identification. It involves overinterpreting certain features based on an initial finding of general similarity and a few specific features. Consequently, this may cause the expert to inadvertently seek to establish the compatibility of the other features (gravity effect) despite their actual discrepancy. Of course, autosuggestive behavior can also work the other way around, most often the result of poor-quality research material.

<sup>16</sup> Ibid. See M. Goc, J. Moszczyński (eds.), *Ślady kryminalistyczne: ujawnianie, zabezpieczanie, wykorzystanie*, Difin, Warsaw 2007.

<sup>17</sup> T. Tomaszewski, *Kompetencje firm prywatnych do wydawania opinii w postępowaniu karnym i cywilnym*, in V. Kwiatkowska-Darul, A. Marek, A. Bulsiewicz (eds.), *Doctrina multiplex veritas una. Księga Jubileuszowa ofiarowana Profesorowi Mariuszowi Kulickiemu, Twórcy Katedry Kryminalistyki*, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń 2004, p. 171.

<sup>18</sup> E. Gruza, *Psychologia sądowa dla prawników*, 2nd edition, Wolters Kluwer, Warsaw 2012, p. 15.

<sup>19</sup> J. Moszczyński, *Wiarygodność...*, op. cit.

Another problem is routine in research. When examining material in a subsequent case of a similar nature, experts may make overly far-reaching observations based on previous analyses and hastily draw conclusions based on them.

It is therefore important to treat each case individually<sup>20</sup>.

The last group of factors that *in minus* affect subjective research include suggestion, peer pressure, or the importance of the event itself, *in* relation to which the expert gives an opinion<sup>21</sup>. In addition, interruption of expertise, ill health, illness, haste, or fatigue are also unfavorable factors. Therefore, it is extremely important for the expert to work in the right conditions, have enough time to perform the expertise, be in good mental and physical condition, and be rested.

All of the above-described factors determine whether there will be a mistake in the issued opinion, which can have disastrous consequences in arriving at the material truth, which will consequently affect the resolution of criminal liability<sup>22</sup>.

### **Admissibility of evidence in the Polish and American legal systems**

The scientific nature of the opinion is also an important issue. Accurate factual findings by the trial authority are the pillar of a just verdict, as in accordance with all the goals of criminal proceedings, which the legislator has outlined in Article 2 of the current Code of Criminal Procedure, will be achieved.<sup>23</sup> Crucial in this aspect is a verdict that will be based on a full and properly evaluated body of evidence, respecting and adhering to all procedural rules. The catalog of evidentiary measures under the current criminal procedure rules includes the defendant's explanations (Articles 175-176 of the Code of Criminal Procedure), witness testimony (Articles 177-192a of the Code of Criminal Procedure), expert opinions (Articles 193-203 of the Code of Criminal Procedure), visual inspection (Articles 207-208 of the Code of Criminal Procedure), the opening of corpses (Articles 209-210 of the Code of Criminal Procedure) and trial experiment (Article 211 of the Code of Criminal Procedure). However, this is not a closed catalog. This is

<sup>20</sup> See M. Goc, J. Moszczynski (eds.), *Ślady kryminalistyczne...*, op. cit.

<sup>21</sup> M. Wroński, M. Pękała, *Źródła błędów w identyfikacji daktyloskopijnej*, „Problemy Kryminalistyki” 2016, no. 252, pp. 31-36.

<sup>22</sup> See J. Moszczynski, *Subiektywizm w badaniach kryminalistycznych. Przyczyny i zakres stosowania subiektywnych ocen w wybranych metodach identyfikacji człowieka*, Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego, Olsztyn 2011.

<sup>23</sup> Law of June 6, 1997. - Code of Criminal Procedure (consolidated version Journal of Laws 2024, item 37, as amended).

because the court is obliged to admit, as well as conduct, any evidence that is relevant to the outcome of the case, is feasible and admissible within the framework of the legislation.

The opinion of an expert is undoubtedly of special importance since an expert is a person of public trust, on whose knowledge and reliability extremely often depend on the accuracy of the findings made, and consequently the achievement of procedural goals<sup>24</sup>. The appointment of an expert under Article 193 § 1 of the Code of Criminal Procedure. is not a right, but a duty of the trial authority. Therefore, if it is necessary to use special knowledge in a case, expert evidence cannot be replaced by other evidence. Therefore, it is difficult not to agree with the statement that it is the expert opinion that often serves to assess the reliability of other evidence, although it is in fact independent evidence<sup>25</sup>.

Given the role that experts play in the criminal process, it is necessary to take into account not only the expert's knowledge and experience but also the use of new means and technological advances. However, there are risks associated with the latter. In the modern criminal trial, it is inadmissible to make factual findings based on untested means and testing techniques. The approval of a given test method involves passing it through the appropriate laboratory tests. Subsequently, it should be tried to demonstrate its diagnostic value, which should be determined by the quotient of the percentage of correct and incorrect indications. *A contrario* Stanislaw Waltoś points out that it is possible to use unproven methods that are in the experimental stage. It also stresses that as a result of advances in technology and science, basic human rights can be violated<sup>26</sup>. To sum up - the research method should meet certain conditions, but neither the Polish legislator nor the jurisprudence has developed unambiguous evaluation standards in this regard, which should be followed. There is no formalized catalog of rules for the admissibility of specific scientific evidence based on modern research methods.

The use of special knowledge in any scientific discipline should be supported by a finding that the scientific discipline has reached an appropriate level of development. Thus, it is correctly argued in the literature that the

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<sup>24</sup> A. Gaberle, *Dowody w sądowym procesie karnym. Teoria i praktyka*, 2nd edition, Wolters Kluwer, Warsaw 2010, p. 175.

<sup>25</sup> Supreme Court ruling of October 28, 2004, ref. III KK 51/04, OSNKW 2005, no. 1, item 4.

<sup>26</sup> S. Waltoś, *Proces karny. Zarys systemu*, LexisNexis, Warsaw 2009, pp. 346-348.

usefulness of scientific evidence should be evaluated not according to legal criteria, but based on the current state of non-legal knowledge<sup>27</sup>.

In the Polish criminal trial, the court, including into evidence scientific evidence that is developed based on a new scientific method, should assess the reliability of this method, which would lead to subjective certainty and accuracy of the application of the new method<sup>28</sup>. After all, it is obvious that the less known, less verified, and more imprecise the research method, the less reliable it is. A trial body can become convinced of the reliability and relevance of a particular research method if:

- 1) an expert can be considered an authority in a given field due to his experience and knowledge,
- 2) the new method is devoid of undue criticism,
- 3) the body knows the shortcomings of this method<sup>29</sup>.

The procedural authority that commissions an expert's opinion does not influence the expert's chosen research methods and techniques. However, he may order a follow-up study if he has any doubts about the opinion presented. The Supreme Court has indicated in this regard that: "in the selection of methods and tests, the expert is independent of the trial body, which does not mean that he is not subject to its control"<sup>30</sup>. The criminal procedure does not and even cannot define the scope of tests that are performed by experts, although they are under the control of the trial authorities, because they also belong to "special knowledge", the existence of which in the case justifies the appointment of an expert at all<sup>31</sup>. Moreover, it certainly cannot be considered within the authority of the parties to the proceedings to impose research methods on the expert<sup>32</sup>. The Supreme Court has rightly stated that only experts are obliged to choose a research method to determine

<sup>27</sup> D. Kaczmarek, *Opinia biegłego i inne środki dowodowe wymagające „wiadomości specjalnych”*, in R. Kmiecik (ed.), *Prawo dowodowe. Zarys wykładu*, Wolters Kluwer, Kraków 2005, pp. 245-246.

<sup>28</sup> See J. Gurgul, *Jeszcze raz o swobodnej ocenie opinii biegłego*, in V. Kwiatkowska-Wójcikiewicz, M. Zubańska (eds.), *Współczesna kryminalistyka. Wyzwania i zagrożenia*, Wyższa Szkoła Policji, Szczytno 2015; J. Kasprzak, *Dowód naukowy – dzieje i współczesność*, in B. Holyst, J. Duży, P. Grzegorzczak, Z. Wardak, D. Wąsik (eds.), *JKsięga Jubileuszowa z okazji 70. urodzin Profesora Bogusława Sygita*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2018.

<sup>29</sup> M. Stępień, M. Skwarcow, *The concept, criteria of admissibility and importance of scientific evidence in Polish and American criminal trial*, "Judicial Review" 2014, no. 9, p. 109.

<sup>30</sup> Order of the Supreme Court of June 25, 2003, ref. IV KK 8/03, LEX No. 80290.

<sup>31</sup> Judgment of the Supreme Court of May 10, 1982, ref. II KR 82/82, OSNKW 1982, z. 10-11, item 78. See gloss by M. Cieślak, „Nowe Prawo” 1983, No. 7-8, pp. 182 et seq.; gloss by F. Prusak, „Nowe Prawo” 1983, No. 9-10, pp. 175-176.

<sup>32</sup> Judgment of the Supreme Court of November 6, 1987, ref. IV KR 502/86, OSNPG 1988, z. 8-9, item 87.

the circumstances that have a significant impact on the decision, taking into account the evidence collected in the case, the circumstances to be evaluated, the current state of science and the available research methods used in a particular scientific discipline<sup>33</sup>. Experts should therefore independently assess whether it is advisable and reasonable to conduct specialized tests. In addition, the Supreme Court stresses that “in the case of the use of innovative research methods by experts, they should not be disregarded, while the results of their research must be compared with the methods previously used, which does not mean imposing specific methods or techniques.”<sup>34</sup>.

A completely different approach to the admissibility of scientific evidence has been adopted by the aforementioned US legal system. The U.S. process has long noted another, overarching issue related to the development of research methods. How do you determine whether a research method is reliable enough to be used in a trial for evidentiary purposes? An attempt to solve this problem was made in two fundamental precedents that have become the basis for today’s evaluation of scientific evidence in the US trial, called the Frye standard and the Daubert standard. They have had a major impact on U.S. law, but have also been widely commented on by European doctrine<sup>35</sup>.

The first U.S. case law precedent discussed is the 1923 Frye ruling of the Court of Appeals for the District of Columbia, which addressed the issue of the admissibility of polygraphic examination<sup>36</sup>. James Frye has been charged with second-degree murder. He admitted to committing the act, but in the proceedings before the court he retracted his earlier explanation, denying his guilt. Proof of his innocence was to be found in his alibi and blood pressure test results. However, the court convicted Frye, finding him guilty as charged. The judgment of the court of first instance was upheld. The appellate court, in rejecting the evidence presented, held that: “it is difficult to determine the point at which a scientific principle or discovery crosses the line between the experimental phase and the stage when they are demonstrable [...] while courts will go a long way in admitting an expert opinion deduced from a well-known scientific principle or discovery, the

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<sup>33</sup> Ibid.

<sup>34</sup> Order of the SA in Krakow of June 27, 2006, ref. II AKzw 406/06, KZS 2006, no. 7-8, item 105; Supreme Court ruling of May 16, 2018, ref. V KO 26/18, LEX no. 2515771.

<sup>35</sup> M. Stępień, M. Skwarcow, op. cit, p. 104.

<sup>36</sup> *Frye v. United States*, 293 F.1013, D.C. Cir. 1923, source: F.B. Lacey, *Scientific evidence*, “Jurimetrics Journal,” 1984, vol. 24(3), pp. 254-272 (NCJ 094054).

problem from which the conclusion is drawn must be sufficiently established to reach general acceptance in the particular field to which it belongs.”<sup>37</sup>.

In the passage of the judgment presented, the court did not consider as valid evidence the results of tests that were performed with a polygraph, because in the opinion of the appellate court, this device has not received adequate approval among specialists. Above all, however, the quoted passage captures the essence of the “universal acceptance” principle established in this judgment, also known as the “Frye test”<sup>38</sup>.

The standard of universal acceptance has since had significant application in the practice of justice. This rule began to apply not only to developing research methods but also to already established ones.

Those approving the method of general acceptance argued that the Frye test guarantees the reliability of the evidence presented by obliging courts to fairly analyze the research methods and techniques used. According to critics, by contrast, the standard was overly conservative, leading to a delay in introducing opinions based on the latest technological advances in the criminal process. In addition, it was accused of a lack of precision when it came to defining the field from which the research method was derived. Reservations were also raised in American doctrine by the very concept of “universality,” which was defined by the judicature as a general, large-scale, but not necessarily universal (recognized by all) acceptance<sup>39</sup>.

As a result of numerous discussions within American academia, the *Federal Rules of Evidence* (FRE) were enacted<sup>40</sup>. FREs are a set of rules of evidence law that sets out the rules of admissibility and the taking of evidence in federal courts in criminal and civil cases; they have been adopted by most states<sup>41</sup>. The catalog of the aforementioned rules does not refer to the principle of universal acceptance but to relevancy in the admissibility of evidence<sup>42</sup>.

<sup>37</sup> J. Wójcikiewicz, *Dowód naukowy w procesie sądowym*, Instytut Ekspertyz Sądowych, Kraków 2000, p. 45; M. Stępień, M. Skwarcow, op. cit.

<sup>38</sup> T. Tomaszewski, *Dopuszczalność dowodów naukowych w amerykańskim procesie karnym*, „Przegląd Sądowy” 1991, No. 5-6, p. 85.

<sup>39</sup> P.C. Giannelli, *General acceptance of scientific test - Frye and beyond*, in E.J. Imwinkelried (ed.), *Scientific and Expert Evidence: Formerly Scientific and Expert Evidence in Criminal Advocacy*, 2nd edition, Practising Law Institute, New York 1981, p. 18.

<sup>40</sup> Legal Information Institute, <https://www.law.cornell.edu/rules/fre> (accessed June 1, 2024).

<sup>41</sup> P.R. Rice, N.-E.W. Delker, *Federal Rules of Evidence Advisory Committee: A Short History of Too Little Consequence*, Federal Rules Decisions 191, 2000, [http://www.wcl.american.edu/pub/journals/evidence/short\\_history.1](http://www.wcl.american.edu/pub/journals/evidence/short_history.1) <http://federalevidence.com/node/1051> (accessed 1.06.2024).

<sup>42</sup> M. Stępień, M. Skwarcow, op. cit.

The above rules of evidence do not indicate a standard of “general acceptance,” but instead set a different standard for the admissibility of evidence, i.e. relevancy. The catalog of these rules includes:

- 1) Rule 401 - which states that a piece of evidence is relevant to the outcome of the case if:
  - It seeks to establish a given fact in a more or less probable way than it would have been without the measure, and
  - the fact is relevant to the outcome of the case<sup>43</sup>.
- 2) Rule 402 - defining the general admissibility of relevant evidence. Relevant evidence is admissible unless otherwise provided in any of the following acts:
  - U.S. Constitution;
  - federal law;
  - these rules; or
  - other rules set by the Supreme Court.

In addition, irrelevant evidence is inadmissible<sup>44</sup>.

- 3) Rule 403 - the court may exclude relevant evidence if its probative value is “significantly outweighed” by the danger of one or more of the following situations:
  - unfair prejudice;
  - Confusion of issues (confusion of relevant issues);
  - misleading the jury;
  - unjustified delay;
  - waste time or
  - unnecessary presentation of cumulative evidence<sup>45</sup>.
- 4) Rule 701<sup>46</sup> - if a witness does not testify as an expert, testimony in the form of an opinion must be limited to one that is:
  - Rationally based on the perception of the witness;

<sup>43</sup> [https://www.law.cornell.edu/rules/fre/rule\\_401](https://www.law.cornell.edu/rules/fre/rule_401) (accessed June 1, 2024).

<sup>44</sup> [https://www.law.cornell.edu/rules/fre/rule\\_402](https://www.law.cornell.edu/rules/fre/rule_402) (accessed June 1, 2024).

<sup>45</sup> [https://www.law.cornell.edu/rules/fre/rule\\_403](https://www.law.cornell.edu/rules/fre/rule_403) (accessed June 1, 2024).

<sup>46</sup> “Issues of expert evidence are regulated in FRE Rules 701-706. They do not distinguish in the manner prescribed for Polish criminal procedure between the persons of an expert and a specialist. To describe them, FRE uses the uniform term *expert*, and refers to his testimony as *expert witness*. What’s more, the FRE treats personal evidence from a witness, the defendant’s explanations and an expert’s opinion essentially equally in procedural terms. The difference between the two lies in the expert’s ability to express an opinion on a specific topic” (M. Stępień, M. Skwarcow, op. cit.).

- helpful in clearly understanding the witness’s testimony or in determining a fact in question, and does not rely on scientific, technical, or other specialized knowledge of Rule 702<sup>47</sup>.
- 5) Rule 702<sup>48</sup> - a witness qualified as an expert by knowledge, skill, experience, training, or education may testify by opinion or otherwise if:
- the expert’s scientific, technical, or other specialized knowledge will facilitate the understanding of the evidence or the determination of a fact;
  - The testimony is based on sufficient facts or data;
  - testimony is the result of reliable principles and methods and
  - The expert reliably applied the principles and methods to the circumstances of the case<sup>49</sup>.

The above-mentioned rules have defined in a completely new way the admission of evidence in a criminal trial. They did not refer to the principle of universal acceptance from the Frye standard, so the federal rules were considered to have superseded this precedent.

Another precedent that ultimately determined the judiciary’s departure from the Frye rule in favor of the Federal Rules of Evidence was *Daubert v. Merkel Dow Pharmaceuticals Inc.* which was later clarified in *Kumho Tire Co. v Carmichael*, both of which refer to FRE Rule 702<sup>50</sup>.

According to the tenets of the Daubert standard<sup>51</sup>, an expert’s opinion should be based on the expert’s special knowledge or specialized research he or she has conducted, but not every such opinion must be considered scientific evidence<sup>52</sup>. And for a particular opinion to become evidence, it had to take into account the following standards:

- 1) the theory or technique should be verifiable in itself and have already been subjected to such scrutiny;
- 2) The research method has been published in the literature;
- 3) the error rate occurring with the new scientific method is known or at least predicTab.;

<sup>47</sup> [https://www.law.cornell.edu/rules/fre/rule\\_701](https://www.law.cornell.edu/rules/fre/rule_701) (accessed June 1, 2024).

<sup>48</sup> “As it is aptly argued in the literature, Rule 702 of the FRE is in fact no different from the Polish one of Article 193 § 1 of the Code of Criminal Procedure, so it is rightly seen as a significant relaxation of the rules of evidence in federal courts” (M. Stepień, M. Skwarcow, op. cit.).

<sup>49</sup> [https://www.law.cornell.edu/rules/fre/rule\\_702](https://www.law.cornell.edu/rules/fre/rule_702) (accessed June 1, 2024).

<sup>50</sup> M. Stepień, M. Skwarcow, op. cit. p. 109.

<sup>51</sup> See D.L. Faigman, “*The Daubert revolution and the birth of modernity: Managing scientific evidence in the age of science*,” *Davis Law Review* 2013, no. 893, [http://repository.uchastings.edu/faculty\\_scholarship/1035](http://repository.uchastings.edu/faculty_scholarship/1035) (accessed June 1, 2024).

<sup>52</sup> J. Wojcikiewicz, op. cit.

4) the method used has received widespread acceptance by specialists<sup>53</sup>.

The case of *Daubert v. Merkel Dow Pharmaceuticals Inc.* transformed much of U.S. evidence law, assigning judges the role of scientific “gatekeepers,” as well as setting forth a list of factors fundamentally aimed at keeping so-called junk science *out of the courtroom*<sup>54</sup>.

From the point of view of the judiciary, among the benefits of the Daubert rules is undoubtedly providing judges with clear criteria for evaluating the handling of scientific evidence. Moreover, the thesis precedent confirms the liberal approach to evaluating scientific evidence expressed in the Federal Rules of Evidence. On the one hand, the emergence of this standard has made it possible to allow new scientific methods in the American criminal process, which were previously limited by the Frye standard. On the other hand, more emphasis has been placed on demonstrating the correctness of the research methodology used, the existence of standards that guarantee the validity of the research conducted, and the level of errors they detect, not just its general acceptability<sup>55</sup>.

Under Daubert standards, lack of general acceptability was not *a sine qua non* for rejecting an expert’s opinion as evidence. The court had a number of evaluation criteria at its disposal, which together determined the inclusion of the expert’s opinion in evidence.

The Daubert standard, however, has been met with much criticism. It is claimed that Daubert’s criteria are poorly matched to the diverse types of expert opinion evidence to which it is applied. In addition, there is a belief that the law should not outsource its unalterable legal determinations to science and scientists with different goals and, consequently, guided by different standards of conduct<sup>56</sup>. Critics also point out that no special reliability test applies to other categories of evidence, such as often unreliable eyewitness testimony. They argue that the reliability test is equally inappropriate for expert testimony<sup>57</sup>.

The 1993 Daubert standard continues to operate in the US process to this day. It has completely supplanted the Frye standard and complements the Federal Rules of Evidence. The transparency of the criteria for evaluating

<sup>53</sup> E.J. Imwinkelried, *The Daubert decision: Frye is dead, long live the Federal Rules of Evidence*, “Trial” 1993, vol. 29, no. 9, pp. 60-61.

<sup>54</sup> F. Schauer, B.A. Spellman, *Is expert evidence really different?*, Notre Dame Law Review 2014, vol. 89(1), p. 2.

<sup>55</sup> M. Stępień, M. Skwarcow, op. cit. p. 107.

<sup>56</sup> F. Schauer, B.A. Spellman, op. cit.

<sup>57</sup> D.E. Bernstein, *Expert witnesses, adversarial bias, and the (partial) failure of the Daubert revolution*, „Iowa Law Review” 2007 no. 93(2), p. 452.

expert opinions in evidentiary proceedings has made the judiciary eager to take advantage of the benefit of this landmark precedent for American criminal procedure.

### Summary

There is no doubt that forensic science and the criminal process are immanently linked. Against the backdrop of the entire body of evidence collected, forensic expertise sometimes plays a fundamental role vis-à-vis the outcome of a criminal trial. In addition to the issues raised in this article, related to the work of an expert, it is important to note the formal-legal<sup>58</sup> aspects of the issuance of expert opinions and their subsequent use in the criminal process.

The admissibility of scientific evidence in the Polish criminal trial is a complex issue, as neither the Code of Criminal Procedure nor any other law specifies standards similar to those presented, for example, in American Supreme Court case law. Despite these shortcomings, Polish jurisprudence during its long practice of applying the Code of Criminal Procedure has developed a number of rules that facilitate the use of special knowledge by trial authorities. Nevertheless, in the author's opinion, it is worth postulating the unification of the above-described rules of admissibility of scientific evidence on the grounds of Polish criminal procedure and their systematization by a few consistent provisions that would support systemic solutions. The experience of American jurisprudence and doctrine, which have introduced permanent rules of procedure into their system, could be adequately implemented in the Polish Code of Criminal Procedure. On the one hand, they would enable the prosecuting authorities to evaluate the evidence according to clear criteria, and on the other hand, to maintain greater attention to the correctness of the research methodology used, which would not be based solely on the general acceptance of a particular method. This would be possible through the development of appropriate standards to ensure the validity of the research and the detection of errors. Therefore, this carries the need for legislative changes, but according to the author, it is also necessary to introduce mandatory training for judges and prosecutors in the methodology of performing forensic expertise, since the preparation for work, especially for judges and prosecutors, in the field of forensic science during legal studies is certainly insufficient. This is confirmed, for example,

<sup>58</sup> See M. Powirska-Bała, *Dowód z opinii biegłego – współczesne trudności i wyzwania na gruncie polskiego procesu karnego*, „Studia Prawnoustrojowe” 2023, no. 62; D. Jagiello, *Rejestr biegłych sądowych*, „Studia Prawnoustrojowe” 2020, no. 49.

by the fact that most Polish universities lack not only forensic laboratories but, above all, highly specialized personnel. If the teaching system were changed to adequately prepare law graduates with forensic knowledge, then mandatory training could be changed to optional.

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