

THE ISSUE OF STANDARDS IN FORENSIC SCIENCES

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Annotation

The study aims to draw attention to many discussion areas related to creating and introducing standards in judicial sciences. The creation of standards in forensic sciences is not an end in itself. Standardizing the methodologies used by forensic experts should serve to reach the truth. The proceeding authority makes decisions based on facts with the help of experts' conclusions. The standard should have a reasonable scientific basis and be susceptible to change linked to research development in its discipline. Every area of forensic examination cannot operate without standards. Standards allow other subjects to determine whether the expert's activities are correct or incorrect. Incorrect expert opinions are not in line with the standards currently in force in a specific area of forensic science. In the author's view, the creation of standards in forensic sciences cannot be without the involvement of state institutions. These institutions should provide an organizational and financial framework to develop best practices in multidisciplinary teams and monitor recent scientific research results on an ongoing basis. The system of standards should constantly be open to changes in existing standards. In ensuring that experts can learn to conduct research properly following current standards, the essential role is provided by the possibility to learn from their own mistakes. This possibility should be created in the framework of procedures established by the state institutions.

Keywords: forensic examination, testing standards, quality control of examination, developing standards, expert judgment errors

Introduction

The study aims to draw attention to many discussion areas related to creating and introducing standards in forensic sciences. No one questions today the usefulness and even necessity of standardizing the activities of experts. However, many standards issues are ignored. The creation of standards in forensic sciences is not an end in itself. The standard must not become a fetish. Standardizing the methodologies used by forensic experts should serve to reach the

truth. For this purpose, the process authority makes decisions based on facts. The standard should have a reasonable scientific basis and be susceptible to change linked to research development in its discipline. In the following sections of the paper, the most critical issues in the author's view related to the implementation of standards are presented.

The importance of standards in the investigations carried out by forensic experts

Quality management of judicial expertise is not possible without standards for collecting research material, conducting research, verifying the correctness of the tests carried out, and inference in different areas of judicial science. Without existing standards, it cannot be concluded that the expert's performance is wrong. The possibility of finding an error depends on the existence of standards. The expert's finding is that the activities of a particular expert are not in line with the standards currently in force in his field. These should be standards duly formally adopted. The expert's work must not be assessed based on standards already adopted after the expert's expert judgment has been carried out.

Standards may apply at all to:

- the collection of data to be examined (for example, disclosure, documentation, safeguarding, collection of traces on the spot of the event; a collection of disputed and comparative traces),
- examination of traces in forensic laboratories (collection of trace information; comparison of disputed and comparative traces; drawing conclusions on the characteristics of the traces found),
- quality control of the tests carried out,
- establish the course of the event, taking into account the opinion of the experts.

The collection of traces (data) to be examined in the case of physical traces is often carried out without the contribution of an expert who gives an opinion. Therefore, other subjects usually collect data for these traces, and other traces examine them. In the literature of the subject, you will find a description of the standards both on the extent of information collected¹ and on how to handle each type of trace². The standards may also be developed and applied to the cooperation of criminal investigation officers with forensic specialists in pre-trial

¹ Lee, H. C., Palmbach, T. M., Miller, M. T. (2014). *Crime scene handbook*. 183–200.

² For example: *Eksperyta sądowa*. (2017). Eds. Kała, M., Wilk, D., Wójcikiewicz, J.

proceedings³. For some examinations (for example, polygraph examination), the expert collects data (performs a pre-test interview, arranges test questions, records the subject's psychophysiological responses), which he later interprets.

In recent years, particular attention has been paid to the need for international cooperation in standards-setting in particular types of forensic expertise. The harmonization of the standards of forensic expertise in the countries of the European Union certainly facilitates the exchange of information and other forms of cooperation between forensic experts. The subject's literature emphasizes that "it is not enough to simply change the technologies <...> Legal professionals also require a new scientific approach which could facilitate the connection of separate law enforcement and law-making links"⁴.

"Being scientific" as a characteristic of methods used in forensic science

When are the standards used by experts are scientific, and how important is this to establish the facts in criminal proceedings? In Polish criminal proceedings, the expert's opinion, whether prepared by scientific methods or by non-scientific means, is subject to the same assessment of the procedural body (most often the prosecutor or court). For example, in the context of an opinion on the causes of fire, one expert can refer only to his practice of working with chimney conductors. Another expert on the same subject will be a professor of the polytechnic, who will refer only to scientific generalization. In Poland, each of these opinions is subject to the same assessment of the decision-maker. Forensic examination has no formal advantage. However, the procedural body should consider that the findings that refer to scientific generalization are transparent (susceptible to control). Personal experience cannot be verified. The expert's judgment prepared employing scientific methods may be subject to quality control, and its correctness may be verified by another expert appointed by the procedural body.

It is worth recalling that "it is also evident to an observer of research practice that the criterion of inter-subjective meaningfulness and testability, while generally useful, is not extremely precise. In particular, it allows for the option of deciding that certain claims, and therefore certain theories, may be scientific to

³ Malewski, H., Kurapka, V. E., Matulienė, S., Navickienė, Ž. (2016). Cooperation between law enforcement officers and forensic specialists. Diagnosis and possible improvements – a Lithuanian experience. *Archiwum Medycyny Sadowej I Kryminologii*. 66 (3), 182–210.

⁴ Bilevičiūtė, E., Drakšas, R., Kurapka, V. E., Matulienė, S. (2016). Problems of Work Organization in Expert Institutions. *Journal of International Studies*. 3, 241–254.

a certain degree. The demarcation is therefore not limited to the dichotomy of science versus non-science. It allows for a gradation of the quality of being scientific, i. e. for an assessment that one claim is “more scientific” than another⁵. The level of “scientificity” of the test methodology used by the expert depends on the value of the two properties of the method: the level of its standardization (while taking into account the level of the basis of these standards on empirical findings) and the level of knowledge of the area of error of the methodology (the area of error is also be known in results of empirical studies)⁶. Thus, the research method’s level of “scientificity” is linked to standardization. On the other hand, however, we can imagine a very standardized methodology with a deficient level of science – when the accepted standards are separated from the results of current scientific research. In practice, experts’ reports must not be considered based on scientific methods when the expert uses a method with an undetermined error area⁷. Can a reasonable judge or prosecutor decide based on the expert’s conclusions of unproven accuracy? This is a purely rhetorical question. Unfortunately, in practice, many of the decisions of the procedural authorities are based on this type of arrangement. Moreover, it appears that many commonly used in court cases experts’ methods do not have an established error area.

Entities that establish standards for forensic experts

The legal systems of different countries (also within the European Union) contain different legal regulations for the situation of forensic experts. According to article 193 §1 of the Polish Code Criminal Procedure⁸: “If determining circumstances significant for deciding a case require special knowledge an expert or experts are consulted” and to § 2, “A scientific or specialized institution may also be called to give their opinion”. In Poland, an expert in the legal proceedings is “a person possessing special knowledge appointed by criminal

⁵ Konieczny, J. (2010). Polygraph examination as scientific evidence. *Polygraph*. 3(13), 105.

⁶ Konieczny, J. (2010). Polygraph examination as scientific evidence. *Polygraph*. 3(13), 103–157; Widła, T. Ekspertyza pismo znawcza jako dowód naukowy. *Nuka wobec przestępczości. Księga pamiątkowa ku czci Profesora Tadeusza Hanauska*. Eds. Błachut, J., Szewczyk, M., Wójcikiewicz, J. (2001). 100; Leśniak, M. (2012). Wybrane problemmy metodologiczne i metodyczne ekspertyzy pisma w Polsce. *Znaczenie aktualnych metod badań dokumentów w dowodzeniu sądowym*. Eds. Kegel, Z., Cieśla, R. 207.

⁷ Leśniak, M. (2012). Wartość dowodwa opinii pismoznawczej. *BS Training*. 44–46.

⁸ Ustawa z dn. 6 czerwca 1997 r. Kodeks postępowania karnego, tekst jednolity Dz. U. 2021, poz. 534.

proceedings authority in a procedural form to issue an opinion”⁹. There is no legal definition of “special knowledge”. Thus, the procedural body decides on a particular case whether it will entrust the expert opinion preparation to an expert or experts or an appropriate institution. Being an expert in legal proceedings means exercising this procedural role in a particular proceeding. The procedural body may choose an expert from a list of so-called “forensic experts”¹⁰ (45 presidents of the regional courts hold 45 lists) or an expert outside that list. Currently, no state authority maintains a list of institutions that may be issued as a “scientific or specialized institute”. Irrespective of who has prepared the expert report (a “forensic expert”, an expert from outside the list, an institute), the expert’s opinion shall be subject to the same assessment as a piece of evidence by the proceeding authority.

Only an opinion that has been prepared on the order of the procedural authority may be used as evidence in proceedings. Such opinions may not be replaced by expert opinions commissioned by the parties to the proceedings. The so-called private expertise can only provide information that the expert judgment is wrongly drafted or that specialist opinion is needed at all. Experts from the lists of “forensic experts” may also produce expert opinions on behalf of entities other than the procedural body. These expert opinions also have only the status of private expertise.

Who should therefore set standards for judicial experts? In Poland, no entity would create official standards for all experts. There are also no standards that have been officially binding on all experts and all institutions. The testing standards in force in police laboratories and other services and laboratories under the Ministry of Justice shall be set by internal acts. They shall not apply outside the institution concerned. There is a real danger that uncompetitive bodies will create standards. This danger is linked to Poland’s lack mentioned above of clarification on which institutions can prepare forensic opinions. There is a mess in this area, and different sentences of the courts take different positions¹¹. In the absence of adequate legislation, there has been far-reaching privatization in the exercise of forensic examination. In principle, everyone can carry out his business under the name of a “scientific institute” or a “specialized institute”. As part of this activity, it can set up its testing standards, train and certify experts, and introduce its quality control systems. These standards can be separated from the results of scientific research or good practice in the

⁹ Cieśla, R. (2006). *Technical Examination of Documents*. 63.

¹⁰ Tomaszewski, T. (2000). *Dowód z opinii biegłego w procesie karnym*. 15–20.

¹¹ Widacki, J. (2015). *Obrońca wobec opinii biegłego w procesie karnym*. *Studia Prawnicze*. 11–14.

area of opinion. Without the appropriate competence, individuals may conduct courses and train further experts (who are subsequently entered on the list of court experts by the presidents of the regional courts). This is particularly the affliction for disciplines where the performance of expert opinions does not involve a significant financial contribution, such as handwriting examination. Examples of such entities are described in the literature¹². In order to avoid these risks, public bodies should be involved in the drafting of standards of forensic examination. Governments should finance comprehensive interdisciplinary research and consultation to provide the basis for developing and implementing the best possible standards over a given period. Attention is drawn to the importance of: “improvements of forensic science education, improving the quality of forensic sciences journals, using scientific standards to guide casework, improving access to data”¹³. International cooperation and the creation of the “European forensic science area” may play a critical role in implementing the best standards in the practice of European forensic experts¹⁴.

Another important question is the extent to which standards should apply. Are they purely internal rules and are only subject to the institution’s experts’ requirements? Should they apply to all experts and institutions in the country or the European Union? In my view, harmonizing standards of research in forensic sciences and improving the quality of forensic experts’ opinions require the introduction of national or even international standards.

Should standards of forensic examination be known to external subjects to institutions or experts who prepare expert opinions? I think so. Opponents of such a position may raise that criminals learn about working experts and improve their actions. But it is not possible to adopt another position because of the transparency of forensic experts requested. The procedural body must assess the evidentiary value of the expert report. In the event of divergent requests, the authority must determine (sometimes with the assistance of other experts) what is the substance of the discrepancies found and whether it is an expert error. It should also be borne in mind that professional legal representatives of the parties to the proceedings play a significant role in the quality

¹² For example: Tomaszewski, T. (2021). Psycholografolog prawdę ci powie. *Człowiek i Dokumenty*. 61, 63–75.

¹³ Fisher, B. A. J. (2015). Adopting a Research Culture in the Forensic Sciences. *Forensic science and the administrator of justice. Critical Issues and Directions*. Eds. Strom, K. J., Hickman, M. J. 64.

¹⁴ Bilevičiūtė, E., Drakšas, R., Kurapka, V. E., Matulienė, S. (2016). Problems of Work Organization in Expert Institutions. *Journal of International Studies*. 3, 242.

control of the opinion. In order to be able to fulfill their tasks correctly and look for possible shortcomings, information on the current testing standards and their scope should be available. As highlighted at the beginning of the article, the expert's error is that the expert's actions are not complying with current standards.

Requirement for standards in forensic science

The duration of the standard depends on the nature of the forensic discipline. For classical handwriting examination, the same standards have been applied for decades. In the area of it of computer forensics, new solutions are emerging within months. Therefore, the time to introduce new standards in a specific field should be appropriate to the technological progress of this discipline. However, even if standards in a particular area change very quickly, they need to be introduced; as has already been raised, the lack of testing standards does not allow the evaluation of the correct experts' actions. The introduction of standards mustn't be regarded as an end in itself. For example, only as a means to obtain an appropriate quality certificate.

The overarching objective of the standards should be to ensure the highest quality in a specific area of opinion. Such an approach requires those responsible for implementing standards to be open to change, in line with the development of research capacities. Moreover, it should actively seek new solutions and keep up to date with scientific research results. This is done among others by organizing periodic meetings where researchers and experts exchange their knowledge. In this way, researchers are also becoming more open to the practice's needs.

Neither the sophism *argumentum ad antiquitatem* nor the sophism *argumentum ad novitatem* should be committed by introducing new testing standards. A specific methodology does not need to be valid only because generations of experts have used it. It doesn't need to be useful either because it's new (*innovative*). The introduction of standards must be preceded by a fair analysis of the actual value of the individual methods¹⁵.

Do the experts always have to work according to standards? I think that no. In the case of disciplines in which new technical solutions are emerging

¹⁵ Mnookin, J. L., Cole, S. A., Dror, I. E., Fisher, B. A., Houck, M., Inman, K., Kaye, D. H., Koehler, J. J., Langenburg, G., Risinger, D. M., Rudin, N., Siegel, J., Stoney, D. A. (2011). *UCLA Law Review*, 58, 725–779; Leśniak, M. (2013). *Czy jest możliwa adaptacja elementów research culture w polskiej praktyce*. In *Kryminalistyka w walce z przestępczością*. Eds. Rosół, A., Słobosz, J., Mięsiak, P. 41–45.

at short intervals, standards (particularly the time-consuming rigor associated with their implementation) already established research standards can be an obstacle to the best possible results of research. But it should be a method for the error area already investigated. There should be at least preliminary information on its accuracy. As mentioned above, it should be unacceptable to use a methodology with an unknown error area. When using a procedure not covered by existing testing standards, an expert can't work incorrectly. For this reason, a forensic expert should not have institutional or legal problems. Of course, he can make mistakes that may lead to incorrect conclusions. In the theory of opinion literature, it is noted that if an expert performs his analysis following the standards of opinion in a given range, it is sufficient to indicate in the report the method used¹⁶. Where the expert uses a methodology that is not commonly used, it should provide a thorough explanation of the choice of the method and describe it in detail.

Quality control in forensic examination

The quality control of a particular forensic expert consists of determining whether the expert report has been carried out according to the applicable standards. It is crucial to ask who controls whether the forensic experts follow the standards? In the Polish legal system, assessing the evidence from the expert's opinion (and any other evidence) belongs to the procedural body. In the context of this assessment, the latter shall, in particular, determine whether the opinion is clear whether the expert has answered the questions raised to him. The proceeding body does not have "specific knowledge" in the forensic expert's discipline and is not competent to value the methods used by the expert¹⁷. It has already been mentioned above that professional representative of the parties can also play an important role in quality control of expert opinions. Such lawyers sometimes outsource private examination and use the arguments they contain against experts' reports. The proper preparation of future judges, prosecutors, and other legal practitioners during legal studies and later legal applications undoubtedly increases such controls' effectiveness. Unfortunately, in Poland, the relatively small number of hours in legal university education and later in the course of the application is devoted to judicial education.

Another essential element of quality control of expertise is the certification of experts. In Poland, the certification process concerns only experts of police

¹⁶ Widła, T. (1992). *Ocena dowodu z opinii biegłego*. 60–61.

¹⁷ Tomaszewski, T. (2000). *Dowód z opinii biegłego w procesie karnym*. 76–80.

laboratories and laboratories run by other state institutions. To the rest, we have only the expert's competence and skills control when the presidents of the regional courts post on the list of experts. However, studies show that often the verification of the expert's competence, when an expert is added to the list of experts, is illusory¹⁸. There is no state certification system for experts outside the mentioned forensic laboratories. They are currently working in Poland as experts to the court of tens of people without adequate competencies.

The quality control of opinions also involves passing periodic (for example, annual) proficiency tests by experts. In Poland, non-state laboratory experts do not carry out such tests (even voluntarily). These tests typically use material from authentic court cases, and when you participate in the study, the expert is given feedback on the mistakes made. The lack of such tests available to all experts does not allow them to learn from their own mistakes.

Reasons for non-compliance with standards

An expert does not comply with the standards of his discipline when: using a method not covered by the standards (as already described above, this is not always justified) or using a procedure covered by the standards but misuses it. The standards may not cover the methods for the following reasons: it is a method that is considered obsolete and has been covered by outdated standards; it is an on-time method developed by an expert; it is a new method (its use as a standard is only under consideration or not yet under consideration). In literature¹⁹, the use of methods that are not subject to standards by experts or which do not comply with standards is, among other things, stated: only the use by experts of methods which have been used since the beginning of entitlement (and the negative psychological attitude to other methods), the use of such methods only, which a subjective expert considers valuable), using his solutions (based only on personal experience), using methods that have been imposed on experts (and this involves, for example, discipline in the organization that employs an expert).

Prevention of expert activities that do not comply with forensic science standards is undoubtedly linked to acquiring expert competencies (and certification procedures) and submitting expert judgment to appropriate quality control. It is essential to exchange experiences between experts, scientists, and

¹⁸ Leśniak, M., Ławrentjew, S. (2014). Przesłanki wpisu na listę biegłych z zakresu badań dokumentów w sądach okręgowych w Częstochowie, Gliwicach i Katowicach. *Dokument i jego badania*. Eds. Cieśla, R. 55–61.

¹⁹ Konieczny, J. (2009). *Badania poligraficzne*. Podręcznik dla zawodowców. 61.

lawyers from different centers and countries, usually at various meetings and conferences. However, I believe that training and seminars are of the utmost importance, where experts share their so-called difficult cases and learn from their own mistakes. These cannot be meetings where experts only praise their success. Participants must not be afraid to share their concerns and take about mistakes made. State institutions should establish a system that allows for this exchange of experience and learning from experts' mistakes. At present, experts generally do not receive feedback on their expertise and errors. In the case of non-institution experts, they may not consult anyone's doubts. But the institution's climate (including the attitude of supervisors or other colleagues) may not help raise concerns either.

Conclusions and recommendations

A specific area of forensic examination cannot operate without standards. Standards allow other subjects to determine whether the expert's activities are correct or incorrect. Improper expert judgment is an action that is not in line with the standards currently in force in a specific area of forensic science. In the author's opinion, the creation of standards in forensic sciences cannot be without the involvement of state institutions. These institutions should provide an organizational and financial framework to develop best practices in multi-disciplinary teams and monitor recent scientific research results on an ongoing basis. The mere establishment of forensic expert standards in a specific field should not be considered a completion of the standardization process. The system of standards should constantly be open to changes in existing standards. In ensuring that experts can learn to conduct research properly following current standards, the essential role is provided by the possibility to learn from their own mistakes. This possibility should be created in the framework of procedures established by the state institutions.

TEISMO EKSPERTIZĖS STANDARTŲ KLAUSIMU

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Santrauka

Tyrimu siekiama atkreipti dėmesį į daugelį diskusinių teismo ekspertizės standartų kūrimo ir įdiegimo aspektų. Standartų kūrimas teismo ekspertizės

srityje nėra savitikslis. Teismo ekspertų naudojamų metodikų standartizavimas turėtų padėti pasiekti tiesą. Bylą nagrinėjanti institucija sprendimus priima remdamasi faktais, tame tarpe ir remdamasi ekspertų išvadomis. Standartas turi turėti pagrįstą mokslinį pagrindą ir būti lengvai keičiamas, atsižvelgiant į atitinkamos srities mokslinių tyrimų plėtrą. Kiekviena teismo ekspertizės sritis negali veikti be standartų. Standartai leidžia kitiems subjektams nustatyti, ar eksperto veikla yra teisinga, ar neteisinga. Neteisingos ekspertų išvados neatitinka šiuo metu konkrečioje teismo ekspertizės srityje galiojančių standartų. Autoriaus nuomone, kuriant kriminalistinių mokslų standartus negali būti ignoruojamos valstybės institucijos. Šios institucijos turėtų sudaryti organizacinę ir finansinę sistemą, skirtą geriausios praktikos pavyzdžiams plėtoti daugiadisciplininėse grupėse ir nuolat stebėti naujausių mokslinių tyrimų rezultatus. Standartų sistema turi būti nuolat atvira pokyčiams. Siekiant užtikrinti, kad ekspertai išminktų tinkamai atlikti tyrimus pagal esamus standartus, esminį vaidmenį atlieka galimybė mokytis iš savo klaidų. Tokia galimybė turėtų būti sudaryta pagal valstybės institucijų nustatytas procedūras.

Raktiniai žodžiai: teismo ekspertizė, ekspertizės standartai, ekspertizės kokybės kontrolė, standartų kūrimas, klaidos ekspertų išvadose.