

Survey as a Method of Scientific Cognition and Its Influence on the Formation of Forensic Road-Technical Examination Methodology

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DOI: [10.32353/khrife.1.2024.11](https://doi.org/10.32353/khrife.1.2024.11) UDC [303.621.34::165.191:343.98](477)

Received: 04.03.2024 / Reviewed: 06.03.2024 / Accepted for print: 27.03.2024 /
Available online: 29.03.2024



The research paper analyzes the main terms (concepts) related to methodology of forensic examination and the survey's results of forensic experts. The research paper's purpose is to analyze the methods of forensic examinations as a basis for developing algorithms for performing forensic examination tasks. Based on the survey results of forensic experts, the main provisions of organizing forensic examinations in general and forensic road-technical examination in particular have been determined, which will be useful for developing general methodological principals of road-technical examinations. It is claimed that methods and techniques of examination can be considered a particular specification of the cognitive method. Expert methodology is a combination of methods, techniques, and means of performing an expert task on one hand, and on the other hand, a special method of forensic examination. a complex of methods of scientific cognition (including general scientific methods) was applied to analyze the survey's results. Due to the complexity and regulatory gaps in the provisions on complex expert examinations, changes to the regulatory legal acts have been proposed to establish the mechanism for formalizing the complex of examinations and comprehensive examination as different forms of integrating specific expertise. The issue of further development of forensic sciences has been considered. It is emphasized that knowledge of the theory of forensic science and pro-

This article is translation of the original Ukrainian content, which source is available at the link: <https://khrife-journal.org/index.php/journal> (translated by Andriy Bublikov). The authors acknowledge translation as corresponding to the original.

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cedural issues of conducting forensic activities is a guarantee of the proper level of professional training for forensic experts. The author's definition of the concept of forensic science in criminal proceedings is provided, and proposals from forensic experts on improving the effectiveness of forensic activities are summarized.

Keywords: specific expertise; forensic expert; method, methodology, forensic methodology; expert conclusion; pre-trial investigation; statistical data; forensic road-technical examination; road infrastructure.

Research Problem Formulation

For proper comprehension of the basic methodological postulates, it is necessary to analyze the fundamental terms (concepts) related to the issue under consideration. Let us start by elucidating the meanings of “methodology” and “cognitive methods”. “The **methodology** (from Greek. μέθοδος — a way of research and cognition; λέξη — doctrine) — 1) A set of approaches, methods, techniques and procedures used in the process of scientific cognition and practical activity to achieve a predetermined goal. <...> 2) The field of theoretical knowledge and ideas about the essence and forms, laws, orders, and conditions of application approaches, methods, techniques, and procedures in the process of scientific cognition and practical activities. Considering the theoretical and socio-cultural experience, M. develops general principles for creating new cognitive tools. The main object

of study for M. is the productive creative and effective method, its essence and sphere of functioning, structure and interaction with other methods and elements of cognitive instrumentation, its correspondence to the nature of the object of study and the connection with the cognitive purpose or goals of practical activity”. The methodology is interpreted as “philosophical doctrine about the research methods of cognition of the surrounding world; a field of science that studies general and special methods of scientific research; a set of methods used in any science; principles of approaching different types of objects of reality and different classes of scientific tasks”². Consequently, the defining aspect in any understanding of the concept of methodology is the notion of the **cognitive method** as a systematic way of “achieving theoretical or practical results, solving problems or obtaining new information based on certain regulatory principles of cognition

- 1 Йолон П. Методологія / Філософський енциклопедичний словник редкол.: В. І. Шинкарук (голова) ; Ін-т філос. ім. Г. С. Сковороди НАНУ. Київ, 2002. С. 374. URL: https://shron1.chtyvo.org.ua/Shynkaruk_Volodymyr/Filosofskyi_entsyklopedychnyi_slovyk.pdf (date accessed: 25.02.2024).
- 2 Бліхар В. С., Козловець М. А., Горохова Л. В., Федоренко В. В., Федоренко В. О. Філософія: словник термінів та персоналій. Київ, 2020. С. 160. URL: https://dspace.lvduvs.edu.ua/bitstream/1234567890/3551/1/%D0%91%D0%BB%D1%96%D1%85%D0%B0%D1%80__%D0%9C.%C2%A0%D0%90.%D0%A4I%D0%9B%D0%9E%D0%A1%D0%9E%D0%A4I%D0%AF_%D0%A1%D0%BB%D0%BE%D0%B2%D0%BD%D0%B8%D0%BA_%D0%BE%D1%81%D1%82%D0%B0%D1%82%D0%BE%D1%87%D0%BD%D0%B8%D0%B9_%282%29.pdf (date accessed: 25.02.2024).

and action, awareness of the specificity of the studied subject area and the laws of functioning of its objects”³. Considering the philosophical interpretations of methodology and methods cognitive methods, based on the opinion of foreign scholars who do not rigidly differentiate these concepts⁴, as well as based on the ideas of Ukrainian scientists who consider methodology either as the doctrine of the scientific method of cognition, or as a system of scientific principles underlying research and the selection of a set of cognitive means, methods, research techniques⁵, E. B. Simakova-Yefremian notes that the most often methodology

- 3 Кримський С. Метод / Філософський енциклопедичний словник С. 373. URL: https://shron1.chtyvo.org.ua/Shynkaruk_Volodymyr/Filosofskiy_entsyklopedychnyi_slovyk.pdf (date accessed: 25.02.2024).
- 4 E. g., Miller G. A. The cognitive revolution: a historical perspective. *Trends in Cognitiv Sciences*. 2003. Vol. 7. Is. 3. Pp. 141–144. DOI: [10.1016/S1364-6613\(03\)00029-9](https://doi.org/10.1016/S1364-6613(03)00029-9) (date accessed: 25.02.2024); Bailenson J. N., Beall A. C., Loomis J., Blascovich J., Turk M. Transformed Social Interaction, Augmented Gaze, and Social Influence in Immersive Virtual Environments. *Human Communication Research*. 2005. Vol. 31. Is. 4. Pp. 511–537. DOI: [10.1111/j.1468-2958.2005.tb00881.x](https://doi.org/10.1111/j.1468-2958.2005.tb00881.x) (date accessed: 25.02.2024); Cappella J. N., Pelachaud C. Rules for Responsive Robots: Using Human Interactions to Build Virtual Interactions / Stability and Change in Relationships; Ed. by Vangelisti A. L., Reis H. T., Fitzpatrick M. A. Cambridge: Cambridge University Press, 2009. Pp. 325–354. DOI: [10.1017/CBO9780511499876](https://doi.org/10.1017/CBO9780511499876) (date accessed: 25.02.2024); Craig R. T. Cognitive Science: A New Approach to Cognition, Language and Communication. *Quarterly Journal of Speech*. 1978. Vol. 64. Is. 4. Pp. 439–450. DOI: [10.1080/00335637809383449](https://doi.org/10.1080/00335637809383449) (date accessed: 25.02.2024); Idem. Communication Theory as a Field. *Communication Theory*. 1999. Vol. 9. Is. 2. Pp. 119–161. DOI: [10.1111/j.1468-2885.1999.tb00355.x](https://doi.org/10.1111/j.1468-2885.1999.tb00355.x) (date accessed: 25.02.2024); Kendon A. Movement coordination in social interaction: Some examples described. *Acta Psychologica*. 1970. Vol. 32. Is. 2. Pp. 101–125. DOI: [10.1016/0001-6918\(70\)90094-6](https://doi.org/10.1016/0001-6918(70)90094-6) (date accessed: 25.02.2024); Lee K. M. The Multiple Source Effect and Synthesized Speech: Doubly Disembodied Language as a Conceptual Framework. *Human Communication Research*. 2004. Vol. 30. Is. 2. Pp. 182–207. DOI: [10.1093/hcr/30.2.182](https://doi.org/10.1093/hcr/30.2.182) (date accessed: 25.02.2024); Macleod C. M. Half a Century of Research on the Stroop Effect — An Integrative Review. *Psychological Bulletin*. 1991. Vol. 109. Is. 2. Pp. 163–203. DOI: [10.1037/0033-2909.109.2.163](https://doi.org/10.1037/0033-2909.109.2.163) (date accessed: 25.02.2024); Medin D. L., Ross B. H., Markman A. B. *Cognitive Psychology*. 3rd ed. Austin, TX: Harcourt College Publishers, 2001. 633 p.; Stroop J. R. Studies of Interference in Serial Verbal Reactions. *Journal of Experimental Psychology: General*. 1992. Vol. 121. No. 1. Pp. 15–23. URL: <https://psych.hanover.edu/classes/Cognition/Archive/2009/Papers/stroop%201933.pdf> (date accessed: 25.02.2024); Thagard P. *Mind: Introduction to Cognitive Science*. 2nd ed. Cambridge, MA: Bradford Books, 2005. 280 p. URL: <https://users.metu.edu.tr/baykan/arch586/Readings/Cognition/Background/Thagard.pdf> (date accessed: 25.02.2024); Walther J. B. Computer-Mediated Communication: Impersonal, Interpersonal and Hyperpersonal Interaction. *Communication Research*. 1996. Vol. 23. Is. 1. Pp. 3–43. DOI: [10.1177/009365096023001001](https://doi.org/10.1177/009365096023001001) (date accessed: 25.02.2024) та ін.
- 5 E. g., Булкат М. С. Зовнішні функції України: теоретико-правовий аналіз: дис. ... канд. юрид. наук. Київ, 2014. 237 с.; Цвік М. В., Петришин О. В., Авраменко Л. В. та ін. Загальна теорія держави і права: підруч. для студ. юрид. вищ. навч. закл. / за ред. М. В. Цвіка, О. В. Петришина. Харків, 2009. 584 с. URL: https://library.nlu.edu.ua/POLN_TEXT/KNIGI_2009/TEorijaDerjav_2009.pdf (date accessed: 25.02.2024); Кириленко І. С. Локальна нормотворчість в сучасному суспільстві: теоретико-правові аспекти: дис. ... канд. юрид. наук. Київ, 2015. 210 с.; Козюбра М. Праворозуміння: поняття, типи та рівні. *Право України*. 2010. № 4. С. 10–21. URL: https://pravoua.com.ua/ua/store/pravoukr/pravoukr_2010_4/ (date accessed: 25.02.2024); Мала енциклопедія теорії держави і права / за заг. ред. Ю. Л. Бошицького. Київ, 2010. 368 с.; Манжун І. В. Визначення методів пізнання в науковій літературі.

is interpreted as a theory of research methods, the creation of concepts, as a system of knowledge about the theory of science or a system of research methods. Under the methodology, the scientist means a set of methods, techniques, ways of research, including techniques and various operations with factual material, which are most often used in a certain sequence⁶. Therefore, the method is an important component of methodology, its concept, although the development of its leading principles and techniques, the sequence of their application, are primarily determined by conceptual principles, and *“the decisive significance for the development of methods of forensic science has an impact of scientific and technical progress”*⁷.

Article Purpose

The purpose of this research is to analyze the methods of forensic examinations, as the correct methodology of any cognitive process is the cornerstone that allows building an algorithm for performing forensic tasks, namely – to create a methodology for expert examination and implement it into expert practice. Since the arsenal of forensic examination methods (general, specific

and special) includes, among others, a survey method (as a general method of cognition), we have outlined this research's purpose as follows: based on the results of the conducted survey of forensic experts, to determine the main principles of organizing forensic examinations in general and forensic road-technical examinations in particular. These principles will be useful for building general methodological provisions for road-technical examinations.

Research Methods

To achieve the set goal, general (general scientific) methods have been applied: the dialectical method and methods of logic at this level (abstraction, analysis, synthesis, comparison, induction, deduction, idealization, formalization, axiomatic, systemic-structural, as well as observation, surveying, description, planning, modeling, hypothesis construction, programmatic-mathematical, and statistical methods, etc.).

It should be noted that research techniques, in our opinion, can be considered a certain specification of the cognitive method. At the same time, an expert methodology is a combination of methods,

Бюлетень Міністерства юстиції України. 2012. № 11. С. 11–17. URL: http://nbuv.gov.ua/UJRN/bmju_2012_11_4 (date accessed: 25.02.2024) ; Рабінович П. Категорії та закони діалектики – актуальний інструмент сучасного правопізнання (за матеріалами практики Страсбурзького суду). Вісник Національної академії правових наук України. 2009. № 4 (59). С. 8–19. URL: http://nbuv.gov.ua/UJRN/vapny_2009_4_2 (date accessed: 25.02.2024) ; Цехмістрова Г. С. Основи наукових досліджень : навч. посіб. Київ, 2003. 240 с. URL: <http://www.info-library.com.ua/books-book-96.html> (date accessed: 25.02.2024) ; Циппеліус Р. Юридична методологія / Роман Корнута (пер., адапт., прикл. з права Укр. і спис. термін.). Київ, 2004. 176 с. ; Колесниченко А. Н. Общие положения методики расследования отдельных видов преступлений / Лисиченко В. К., Гончаренко В. И., Салтвский М. В. и др. Советская криминалистика. Методика расследования отдельных видов преступлений // под ред. В. К. Лисиченко. Киев, 1988. С. 7–15 ; Шепітько В. Ю., Коновалова В. О., Журавель В. А., Глібко В. М., Дудніков А. Л., Шевчук В. М. Криміналістика : підручник / за ред. В. Ю. Шепітька. 4-ге вид., перероб. і допов. Харків, 2008. 464 с. URL: <https://law.sspu.edu.ua/files/documents/books/library/17/shepitko.pdf> (date accessed: 25.02.2024).

6 Сімакова-Єфремян Е. Б. Комплексні судово-експертні дослідження: теорія та практика : монографія. Харків, 2016. С. 165–166.
7 Op. cit. С. 166.

approaches, and means of performing an expert task on one hand, and a specialized method of forensic examination on the other.

Analysis of Essential Research and Publications

In the Ukrainian scientific literature, the issue on defining methods of cognition has been repeatedly considered. Thus, I. Manzhul studied Ukrainian⁸ and foreign literary sources on the definition and classification of general scientific, specialized-legal, and other methods of cognition, their interconnection and interdependence in the process of scientific research⁹. In particular, she stated that “legal science has not developed a single classification of cognitive methods of phenomena and processes of real reality, the authors distinguish and group methods of cognition in accordance with the tasks set for the completeness and comprehensiveness of the chosen research; <...> fully and comprehensively studying a particular phenomenon or process is possible only through the application of a system of interconnected

and interdependent methods, their selection is determined by the nature and essence of the chosen specific phenomenon”¹⁰.

Considering research methods in social work, O. Povidaichyk and R. Zhylenko, note that the survey is “a form of questioning a researched group of individuals based on a pre-prepared list of questions. The responses to the questionnaire serve as initial empirical material for generalizations and conclusions.

A questionnaire survey is considered one of the most efficient methods of collecting <...> information.

A survey is a system of questions united by a single research idea aimed at identifying quantitative and qualitative characteristics of the object and subject of research. The main function of the survey is to provide the researcher with reliable information about the subject of analysis”¹¹.

Considering the above, let's present the results of the survey of forensic experts from specialized institutions of the Ministry of Justice of Ukraine on organizational and methodological issues of forensic examination.

- 8 Див.: Бачиний В. А., Журавський В. С., Панов М. І. Філософія права : словник. Київ, 2003. 404 с. ; Волинка К. Г. Теорія держави і права : навч. посіб. 2-ге вид., стер. Київ, 2006. 235 с. ; Сухонос В. В. Теорія держави і права : підручник. Суми, 2014. 544 с. URL: https://essuir.sumdu.edu.ua/bitstream-download/123456789/47858/1/Sukhonos_ml_TDP_uchebnik.pdf (date accessed: 25.02.2024) ; Філософія права : навч. посіб. / за ред. О. Г. Данильяна. Київ, 2009. 269 с. ; Ржевська В. С. Право держави на самооборону в світлі розвитку юридичних гарантій міжнародної безпеки : автореф. дис. ... канд. юрид. наук. Київ, 2003. 22 с. ; Шляхтун П. П. Політологія: історія та теорія : підручник. Київ, 2010. 472 с. URL: https://shron1.chtyvo.org.ua/Shliakhtun_Petro/Politolohiia_istoriia_ta_teoriiia.pdf (date accessed: 25.02.2024) ; Галака С. П. Ядерне нерозповсюдження у світовій практиці : автореф. дис. ... д-ра політ. наук. Київ, 2006. 26 с. ; Шейко В. М., Кушнарченко Н. М. Організація та методика дослідницької діяльності : підручник. 4-ге вид., випр. і допов. Київ, 2004. 307 с. URL: https://shron1.chtyvo.org.ua/Sheiko_Vasyl/Orhanizatsiia_ta_metodyka_naukovo-doslidnytskoi_diialnosti.pdf (date accessed: 25.02.2024) ; Скакун О. Ф. Теорія держави і права : підручник. Харків, 2001. 656 с. URL: <http://politics.ellib.org.ua/pages-cat-51.html> (date accessed: 25.02.2024) та ін.
- 9 Манжұл І. В. Зазнач. твір. URL: http://nbuv.gov.ua/UJRN/bmju_2012_11_4 (date accessed: 25.02.2024).
- 10 Манжұл І. В. Зазнач. твір. С. 16.
- 11 Повідайчик О., Жиленко Р. Методи досліджень у соціальній роботі : навч. посіб. Ужгород, 2018. С. 68. URL: <https://www.uzhnu.edu.ua/uk/infocentre/get/42750> (date accessed: 25.02.2024).

Main Content Presentation

First of all, we express sincere gratitude to all the employees of the specialized institutions of the Ministry of Justice of Ukraine who participated in the survey (432 forensic experts were surveyed).

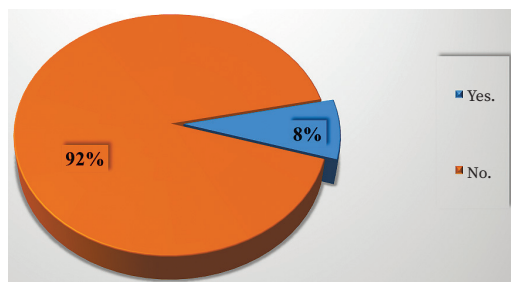


Fig. 1. Permissibility of posing legal issues to a forensic expert

Since it is prohibited by law to ask forensic experts legal questions, the majority of respondents also consider this unacceptable (see Fig. 1). At the same time, 8% of respondents provided the opposite answer, indicating the ambiguous attitude of experts towards the norm of the Criminal Procedure Code of Ukraine (hereinafter referred to as *CPC of Ukraine*), which prohibits conducting examinations on legal issues (Part 1 of Article 242)¹².

Meanwhile, regarding issues that cannot be resolved by forensic experts, 61% of respondents mentioned determining the guilt of a person in committing an offense, 38% – determining the facts of violations of the law by a specific person, 1% – other legal issues, including: issues

where a forensic expert is a subject of law by education; compliance of individual regulatory provisions with legislation; proving the inconsistency of a person's actions with the requirements of regulatory legal acts; the degree of a person's guilt (see Fig. 2).

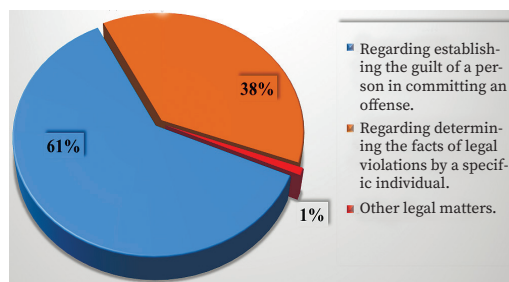


Fig. 2. Issues that cannot be investigated by a forensic expert

The integrative processes taking place at the current stage of the development of forensic science are stirring up an active discussion around complex forensic examinations. The issue of complexity also concerns the organization of road engineering examination when (in addition to specific expertise in specialty 10.16 “Road engineering examination”)¹³ it is necessary to apply specific expertise from other fields of science and technology (for example, when it is necessary to calculate the amount of damage from the destruction of road objects infrastructure as a result of shelling or bombing, it is advisable to appoint a comprehensive explosive-technical, construction-technical and road-technical forensic examination).

12 Кримінальний процесуальний кодекс України від 13.04.2012 р. № 4651-VI (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 25.02.2024).

13 Положення про Центральну експертно-кваліфікаційну комісію при Міністерстві юстиції України та атестацію судових експертів : затв. наказом Мін'юсту України від 03.03.2015 р. № 301/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z0249-15#Text> (date accessed: 25.02.2024).

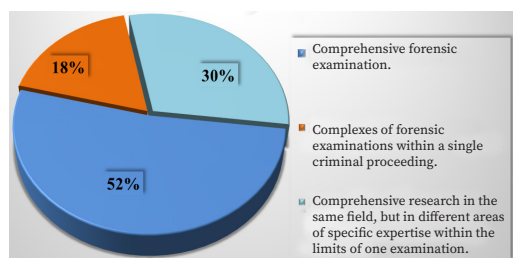


Fig. 3. Forms of complexity in conducting forensic examinations

In particular, in response to issues on the forms that a comprehensive approach can take during forensic examinations, the majority of respondents gave priority to complex forensic examination (52%). At the same time, a fairly significant percentage of forensic experts singled out complex studies from the same field, but in different areas of knowledge (30%), as well as complexes of forensic examinations for one proceeding (18%).

Therefore, due to the complexity and legal unsettledness of the provisions on complex expert research, the following questions remain unresolved and subject to debate until today: how should experts proceed if an examination is designated as comprehensive but in essence, it is not (whether it is necessary to submit a request to change the status or category of the examination to the person who appointed it, or if the head of the institution can do this independently?). In our opinion, the Instructions on the Appointment and Conduct of Forensic Examinations and Expert Research ¹⁴ should provide a mechanism for the preparation of a set of examinations, if in one resolution (court decision) questions are raised that relate to different fields of knowledge and do not contain

a general task (common) for all experts. We also consider it appropriate to set out Para. 1 Clause 4.1 Ch. IV of the Instructions ¹⁵ in the following wording: *“If the examination is assigned to an expert institution, the head of such an institution entrusts the examination to one or more experts. These experts provide an opinion on their own behalf and are personally responsible for it”*.

Closely related to the problem of integration of specific expertise outlined above is the issue of integration of sciences, namely: is the trend towards the development of basic forensic sciences (forensic medicine, forensic pharmacy, forensic biology, forensic engineering (for example, forensic construction engineering) justified from a praxeological point of view) forensic ecology, etc.)? The answer to this question united the respondents into three groups: 40% answered unequivocally about such a need for all possible areas of expert research, 30% preferred only certain areas, and 29% did not see this need (see Fig. 4). The respondents' own proposals are as follows: it is advisable to develop forensic sciences only if there is a necessary base for this and support for the development of relevant branches of “mother” sciences, it makes sense to develop a section of one forensic science – forensic examination, it is worth introducing educational disciplines in higher education institutions in the areas of expert specialties within the “mother” sciences. Undoubtedly, each of these proposals is acceptable for the development of forensic examination, since *“forensic examination is a study based on specific expertise in the field of science, technology, art, craft, etc. of objects, phenomena and*

14 Інструкція про призначення та проведення судових експертиз та експертних досліджень : затв. наказом Мініюсту України від 08.10.1998 р. № 53/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 25.02.2024).

15 Op. cit.

processes in order to provide a conclusion on issues that are or will be the subject of legal proceedings”¹⁶.

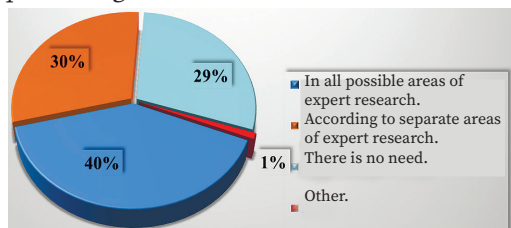


Fig. 4. It is necessary to develop basic forensic sciences (forensic science, forensic pharmacy, forensic biology, forensic engineering (e.g., forensic construction engineering), forensic ecology, etc.

Since the majority of respondents provided a positive response to the previous question, there arose a need to inquire about their opinion on the expediency of training specialists in academic disciplines in the fields of forensic sciences during the education of individuals in the respective institution of higher education. The survey results are as follows: 80 % of respondents answered “yes”, 19% answered “no”, and 1 % indicated otherwise (see Fig. 5). In particular, respondents suggested introducing into higher education institutions: specialties in the fields of law and the duties of a forensic expert, interaction with investigative authorities, courtroom conduct; the subject of “forensic science” with the study of the legal foundations of the activities of forensic experts (including involvement of practicing forensic experts in teaching); academic disciplines covering the maximum number of expert specialties in various fields of science and technology; such disciplines only if there

are appropriate licenses and educational programs. We support the training of expert personnel both in higher education institutions and based on scientific (including forensic) institutions, provided that such activities are appropriately licensed. It should be noted that the first steps in this direction have already been taken: for example, the National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» has obtained a license to conduct educational activities in the field of postgraduate education for individuals with higher education in the branch of knowledge 08 “Law”, specializing in 081 “Law”, under the educational program “Theoretical, Organizational and Procedural Issues of Forensic Science”. This license was issued by the Ministry of Education and Science of Ukraine dated on November 23, 2020, under Order No. 256-L¹⁷.

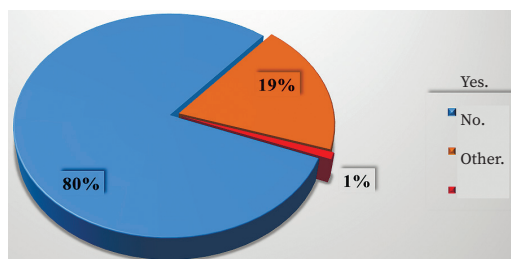


Fig. 5. It is advisable to train specialists in academic disciplines in the fields of forensic science during their education at the relevant institution of higher education

Due to the significant interest indicated above, the question of mandatory knowledge by forensic experts of the theory of forensic science, criminology, and procedural legislation is of considerable importance: 86 % of respondents gave a definite positive response, while 14 %

16 Про судову експертизу : Закон України від 25.02.1994 р. № 4038-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/4038-12#Text> (date accessed: 25.02.2024).

17 Про ліцензування освітньої діяльності : наказ МОН України від 23.11.2020 р. № 256-л. URL: <https://mon.gov.ua/ua/ministerstvo/poslugi/licenzuvannya/protokoli-zasidan-licenzij-noyi-komisiyi-rishennya-mon/2020-rik> (date accessed: 25.02.2024).

gave a definite negative one (see Figure 6). In our opinion, this indicates a certain professional distortion among experts who provided such a negative response, as without knowledge of the theory of forensic science and procedural issues related to forensic activities, it is inappropriate to talk about the proper level of professional training.

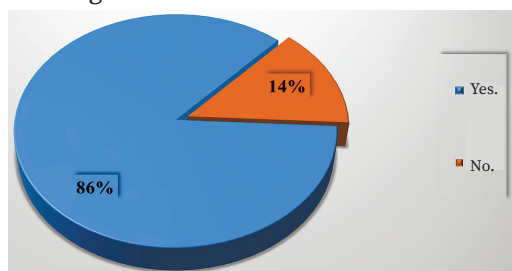


Fig. 6. a forensic expert should be well-versed in the theory of forensic science, criminology, and procedural legislation

That is why the following question of the survey regarding respondents' knowledge of theoretical and procedural issues of forensic science in defining the object of forensic science is relevant. The majority of respondents (80 %) identify the object of forensic science as the carrier of information about factual data and circumstances of the case falling within the scope of the expert examination's subject. At the same time, 20 % of the respondents confuse the concepts of the object and subject of forensic science (see Figure 7). Thus, the survey results have shown that the lack of knowledge (or disregard) of theoretical and procedural issues of forensic science has negatively affected the professional level of experts who mix up the fundamental concepts of the subject and object of forensic science.

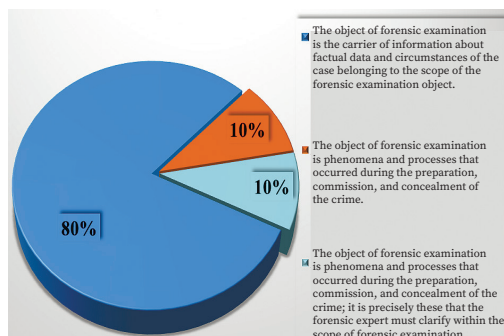


Fig. 7. Correct definition of the forensic examination object

It should be noted that such responses somehow contribute to a certain inconsistency in the definition of forensic science enshrined in the legislation of Ukraine. According to Article 1 of the Law of Ukraine "On Forensic Examination" (hereinafter referred to as relevant Law), "forensic science is an **examination**¹⁸ based on specific expertise in the field of science, technology, art, craftsmanship, etc., of objects, **phenomena, and processes** in order to provide conclusions on issues that are or will be the subject of legal proceedings"¹⁹. In our opinion, phenomena and processes belong not to objects, but to the subject to the forensic science. As an example, performers of complex road technical, construction and engineering examination, and explosive engineering examination have the task of calculating the extent of damage caused by shelling a section of road infrastructure. Obviously, the phenomena and processes of artillery shelling, which caused the damage, are not the object of this investigation, as they occurred during the commission of a crime – a violation of the laws and customs of war. The subject of investigation for the commission of forensic experts in this case is the carriers of information about the mentioned phenomena and processes, and clarifying

18 Тут і далі позначено мною.— Прим. авт.

19 Про судову експертизу URL: <https://zakon.rada.gov.ua/laws/show/4038-12#Text> (date accessed: 25.02.2024).

the fact and circumstances of obtaining damage as a result of shelling will fall within the scope of the subject of complex examination in calculating damages. We share the opinion of scientists who have long noted the somewhat imprecise delineation of the circle of “objects of expert research, including phenomena and processes”²⁰ in the Ukrainian regulatory framework. We propose our own definition of this concept: **forensic examination in criminal proceedings** is the examination by a forensic expert of material (materialized) objects with the purpose of providing conclusions on issues that are or will be the subject of forensic consideration in order to clarify, based on the use of specific expertise in the fields of science, technology, art, crafts, etc., the factual data and circumstances of the criminal proceedings regarding certain objects, phenomena, and processes that occurred (were used) during the preparation, commission, and concealment of the criminal offense.

Above, we have already focused on the integration of specific expertise. Since drawing conclusions by an expert is one of the most crucial stages of forensic investigations, respondents were asked which approach they consider correct for forming conclusions in complex forensic examination. According to the survey results, 74% of forensic experts supported the following mechanism: first, individual examinations by each forensic expert within their competence, then joint evaluation of all results in the synthesizing part of the conclusion, and finally, forming a general conclusion. We also propose such an approach to the implementation of road-technical examinations in conjunction with other types of expert specialties. At the same time, it should be noted that a quarter of respondents consider it appropriate to provide conclusions separately (see Fig. 8). Other response options were also offered

to experts surveyed: the head of the expert institution independently determines the method of conducting examination, or forensic experts are allowed to make such decisions individually, in the course of their work. Those 1% of experts who share the latter statement do not understand the essence of performing integrative tasks, which a forensic expert is unable to solve within the confines of only their “own” specific expertise. Therefore, the example provided confirms the need for developing methodologies for comprehensive forensic investigations across all types and prompts the issuance of a specific legal act regarding the appointment and conduct of comprehensive forensic examinations.

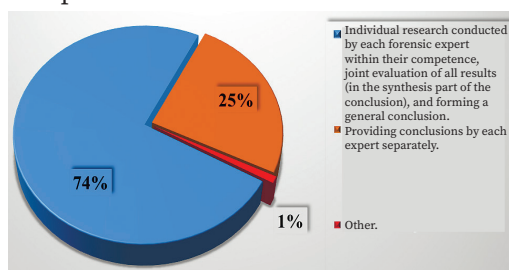


Fig. 8. The correct method of forming conclusions in comprehensive forensic examination

During the survey, questions regarding the differentiation of forensic examination methods were also investigated (see Fig. 9): 54% of respondents categorize forensic examination methods into three main categories (general (scientific), individual, and specialized), while 45% categorize them into two (general (scientific) and specialized), and 1% according to other criteria (universal, scientific, specialized; universal, interdisciplinary, specific scientific, specialized; dialectical, general scientific, specific scientific, and specialized). Without delving into detailed analysis, let's note that the distinction of universal methods, by their essence, does

20 Е. г., Сімакова-Єфремян Е. Б. Зазнач. твір. С. 147.

not differ from general ones; we also do not see grounds for distinguishing specific scientific methods (in our opinion, it coincides with the basis for individual methods). At the same time, for all differentiations, the isolation of specific methods of forensic science is characteristic, the functions of which are performed by forensic examination techniques.

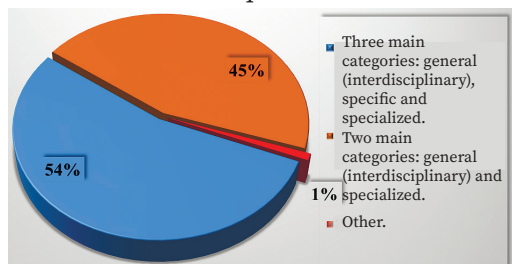


Fig. 9. Differentiation of forensic science methods

A pressing issue for ensuring the proper level of forensic activity in our state (aside from problems of regulatory framework, the need to improve theoretical and methodological bases, material provision of forensic experts, and increase funding for enhancing instrumental base) is the illegal influence (pressure) on forensic experts aimed at persuading them to

provide knowingly false conclusions or to refuse to perform their duties. Although 86% of respondents did not fall under such external influence, 14% found themselves under similar pressure (see Fig. 10), meaning that every 14 out of 100 individuals experienced negative influence aimed at persuading them to violate the law.

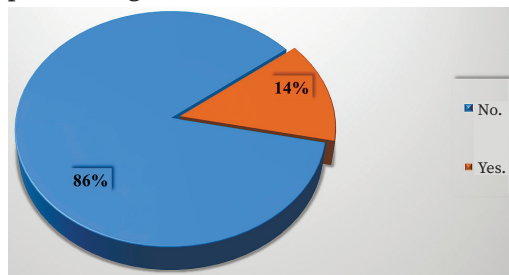


Fig. 10. Feeling of influence (pressure) on a forensic expert in order to persuade them to provide a false expert conclusion (to refrain from fulfilling their duties)

Figure 11 depicts a diagram clearly illustrating from what persons (authorities) forensic experts experienced such unlawful influence (pressure): from investigators – 24%, from defenders – 4%, from the prosecutor – 11%, from judges – 2%, from the head of the expert institution – 8%, from the victim – 3%, from the suspect (defendant) – 3%, from the representative of the party in the case – 20%, from the witness – 1%, from the anonymous person – 9%.

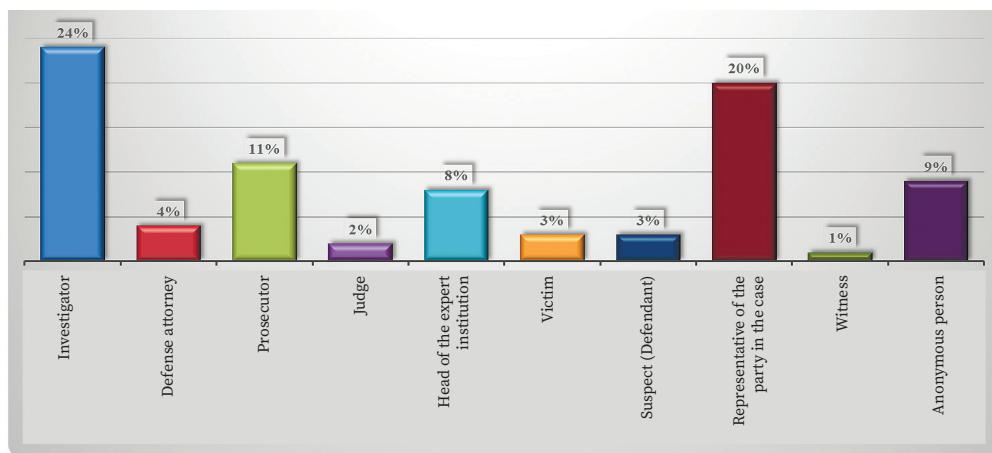


Fig. 11. A person who attempted to influence (press) the forensic expert in order to persuade them to provide a false conclusion (to refuse to fulfill duties)

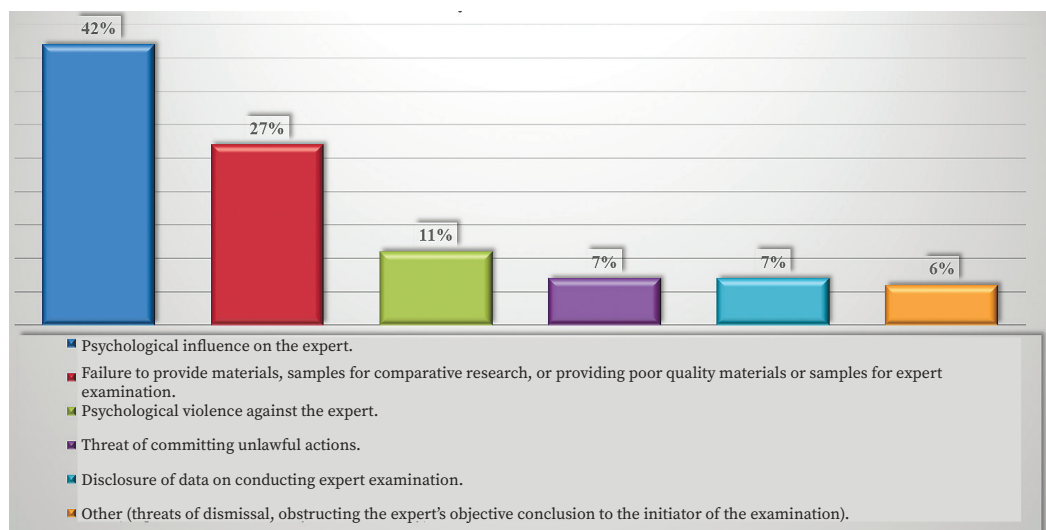


Fig. 12. Features of influencing (pressure) on the expert in order to induce them to provide a false conclusion (refusal to perform duties)

in the case – 20%, from witnesses – 1% and from anonymous individuals – 9%. Additionally, Fig. 12 demonstrates what this influence consisted of: 42% – psychological influence; 11% – psychological violence against the expert; 27% – failure to assist the expert in accessing the object, failure to provide materials or providing knowingly poor-quality materials or samples for expert examination; 7% – threat of unlawful actions; 7% – disclosure of data on conducting expert examination; 6% – other (threats of dismissal, unlawful alteration of conclusions, etc.).

The above diagrams indicate the necessity of taking effective measures to counteract such negative phenomena, therefore, we propose to amend Article 386 of the Criminal Code of Ukraine ²¹ as follows:

“Article 386. *Obstruction of the appearance in court, participation in a court session of a witness, victim, expert, specialist,*

coercion to refuse to give testimony or conclusion, pressure on an expert to induce him to engage in other illegal actions”.

Obstruction of the appearance of a witness, victim, expert, specialist in court, pre-trial investigation authorities, temporary investigators, and special temporary investigative commission of the Verkhovna Rada of Ukraine, coercion to refrain from giving testimony or conclusions, as well as to give knowingly false testimony or conclusion by means of threats of murder, violence, destruction of property of these persons or their close relatives or disclosure of information that dishonors them, or bribery of a witness, victim, or expert for the same purpose, pressure on a forensic expert to commit other illegal actions related to the performance of their duties, as well as threats to take the specified actions in revenge for previously given testimony or conclusion – shall be punishable by a fine of fifty to three hundred non-taxable minimum incomes of citizens or corrective labor for

²¹ Кримінальний кодекс України від 05.04.2001 р. № 2341-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 25.02.2024).

a term of up to two years, or arrest for a term of up to six months, or restriction of liberty for a term of one to three years with deprivation of the right to hold certain positions or engage in certain activities for a term of up to three years.”

The motivation and influential factor for preventing violations in the field of forensic activity is the increase in remuneration, monetary and pension provision for forensic experts, improvement of norms of their social protection, since the issue of implementing the provision of Part 2 of Article 18 of the relevant Law (according to which “employees of state specialized institutions (non-military personnel and those without ranks of ordinary and officer staff), who have the qualification of forensic expert, are entitled to salaries at least 10 times the subsistence minimum established for able-bodied persons as of January 1 of the calendar year”) ²² is extremely acute: the budget legislation of Ukraine suspends the operation of this provision every year, starting from 2018. As of today, the official salary of a forensic expert is 10,284 UAH. At some enterprises, the pay for unskilled workers is several times higher. Salaries for highly qualified scientific personnel, who are certified as forensic experts and hold scientific degrees and titles, amount to approximately 13,000 UAH. However, the risks associated with the work of forensic experts have not been taken into account, especially during a state of war, when working conditions are more difficult, and there are risks of corruption and the burden of personal responsibility for each expert. As a result, talented forensic experts are leaving forensic institutions, which reduces the level of expert support for justice in Ukraine, leading to unprecedented expert

overload and accumulation of unfulfilled examinations. In some departments, a single forensic expert simultaneously handles hundreds of expert proceedings, with deadlines exceeding all permissible norms. Implementation of Part 2 of Article 18 of the relevant Law would have a significant positive effect: then the work of a forensic expert would gain prestigious status, attracting the best specialists - both talented youth and experienced scientists. Moreover, this Law should also include provisions regarding the pension provision for forensic experts, which should have a special character.

There is also an urgent need to update the scientific, methodological and instrumental base of state specialized expert institutions. Thus, in response to the question about the sufficiency of technical and forensic support, 80 % of respondents gave a negative answer and only 20 % gave a positive answer (see Fig. 13).

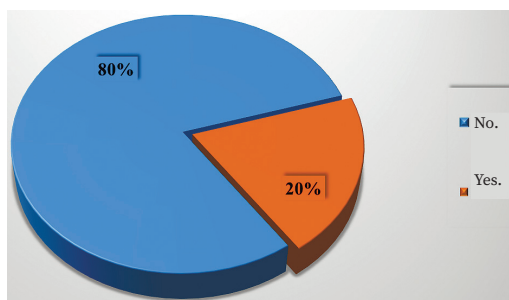


Fig. 13. Sufficiency of technical and forensic support for expert activities

Fig. 14 presents information on potential qualitative changes in such provisions: in particular, 59 % respondents mentioned updating the material and technical base for conducting expert research, 28 % mentioned the automation of expert research (development of an automated workplace (hereinafter – AW)

²² Про судову експертизу URL: <https://zakon.rada.gov.ua/laws/show/4038-12#Text> (date accessed: 25.02.2024).

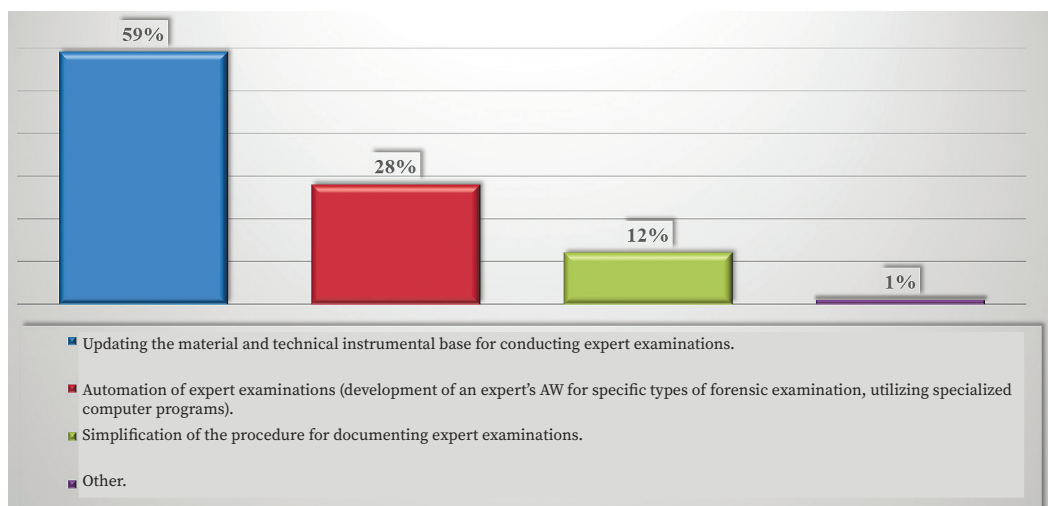


Fig. 14. Proposals for technical and forensic support of expert activities

for experts, etc.), 12 % insist on simplifying the procedure for formalizing expert research; 1 % specify other (optimization of electronic document flow; automatic creation of accompanying documents; development and use of artificial intelligence for composing accompanying documentation). In our opinion, the main obstacle in solving the issue of material and technical support is insufficient funding for the purchase of modern equipment, especially during times of war, when all funds in the country, understandably, are directed towards the needs of the Armed Forces of Ukraine.

We will continue to consider problematic issues of expert support for justice in Ukraine. In our publications, we have repeatedly emphasized the lack of methodological support for forensic activities in general and road-technical examination in particular. Let's prove it with the answers of the respondents to the question: "Do you consider the existing methodological support for

expert examinations to be sufficient?", to which 65 % of respondents gave a negative answer, and 35 % consider the level of methodological support to be sufficient (see Fig. 15).

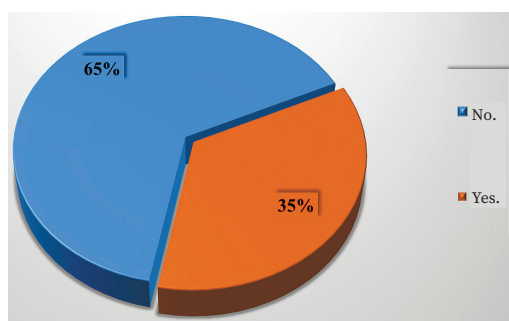


Fig. 15. Sufficiency of existing methodological support for expert examinations

Commenting on the results of this survey, you can conclude that the methodological support of forensic activities is only 35%, which is clearly insufficient for the proper level of expert support for justice in the state.

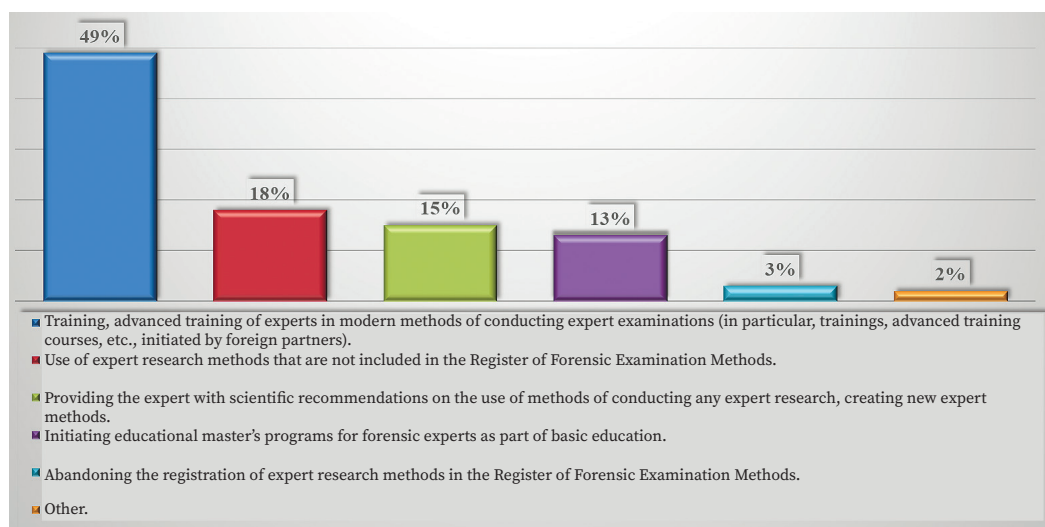


Fig. 16. Proposals for qualitative changes in the methodological support of expert examinations

Fig. 16 illustrates the results of responses to the question: “What may constitute qualitative changes in such provision?”, where 49% of respondents provided an answer related to training, upgrading the qualifications of experts in modern methods of conducting expert examinations (including training, qualification courses, etc., initiated by foreign partners); 18% mentioned the use of expert research methods not included in the Register of Forensic Examination Methods²³; 15% consider it expedient to develop advanced expert methodologies and provide the expert with scientific recommendations on the application of methods for conducting expert examinations; 13% suggested initiating educational master’s programs for forensic experts within the framework of basic education; 3% (for reasons unclear to us) advocate for the abandonment of registering forensic examination methods, while 2% mention other suggestions (creating a centralized information

database for all research directions within the Department of Scientific and Methodological Support of the Department of Expert Support of Justice of the Ministry of Justice of Ukraine to provide informational assistance to experts upon their requests; developing investigation algorithms for typical questions (we believe this proposal includes the development of expert methodologies); replenishing the library collection with literature used by foreign colleagues (with translation provided) and/or creating an electronic library); establishing a full-text information base of methodologies for conducting forensic examinations with access for all experts (since the Ministry of Justice of Ukraine is the custodian of this Registry, it is appropriate for the Department of Expert Support of Justice of the Ministry of Justice to oversee this information base); continuous education of forensic experts in scientific and technical fields, which we do not see as identical to the professional development of forensic experts.

23 Реєстр методик проведення судових експертиз : офіц. сайт. URL: <https://rmpse.minjust.gov.ua> (date accessed: 25.02.2024).

Turning to issues concerning the organization of complex forensic examinations, let's consider the survey results on two more questions. To the first of them ("Have you encountered cases in your practice when, instead of a number of separate examinations in one proceeding, it would be more appropriate to appoint a complex forensic examination in one proceeding?") 48 % provided an affirmative answer, while 51 % of respondents stated that all resolutions, which they were tasked with carrying out examinations contained the correct definition of the category of forensic examination (*see. Fig. 17*).

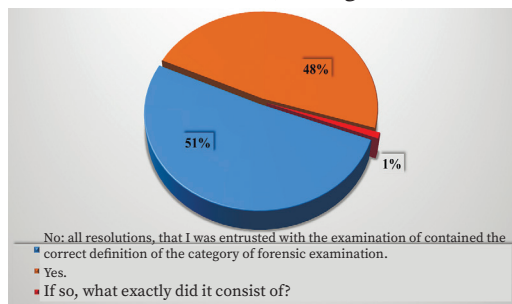


Fig. 17. Cases of expedient appointment of a complex forensic examination instead of a number of separate examinations in one proceeding

One percent of respondents cited the following reasons for appointing a number of individual expert examinations instead of complex forensic examinations: lack of education or incompetence of persons appointing the forensic examination (engaging a forensic expert); improperly formulated questions: incorrect determination of the category of forensic examination. In our opinion, all the reasons mentioned presuppose the development and implementation of a regulatory legal act on the appointment and conduct of complex forensic examinations in expert practice.

The last question of our survey is related to the previous one: "Can a single

forensic expert conduct a complex forensic examination in criminal proceedings (if he/she has two or more higher education degrees and, accordingly, two or more certificates of qualification in different expert specialties?"). 80 % of respondents answered affirmatively, while 20 % answered negatively (*see Fig. 18*).

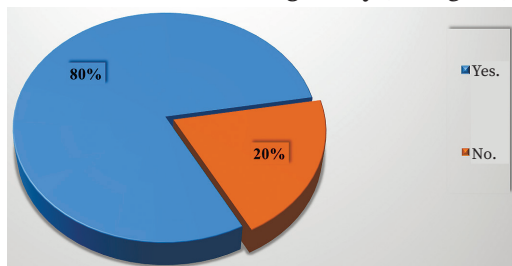


Fig. 18. The possibility of conducting a complex forensic examination by one forensic expert (if he or she has two or more higher education degrees and, accordingly, two or more certificates of qualification in different expert specialties)

We share the opinion of the majority of respondents, since the Criminal Procedure Code of Ukraine does not contain the concept of complex examination (including commission, initial, additional, or repeated), which does not at all indicate the impossibility of appointing and conducting such categories of examination in criminal proceedings. Moreover, investigative, judicial, and expert practice confirm the active application of these examinations in the criminal process. Therefore, we consider it necessary to introduce into the Criminal Procedure Code of Ukraine a provision that would allow for the appointment and conduct of such forensic examinations (including its conduct by a commission of experts, as well as by a single expert who has the relevant expert specialties in the fields of science and technology necessary to perform the expert task).

The algorithms for performing such tasks should be set out in the forensic examination methods that serve as special forensic methods. For example, the methodology for calculating the amount of material damage and the cost of restoration of a road infrastructure facility damaged as a result of shelling (bombing) is a special method characteristic of forensic road and technical examination. The concept of methodology has received a regulatory definition: it is interpreted as the result of scientific work containing a system of research methods used by an expert in the process of sequential actions to perform a specific expert task ²⁴. According to the Procedure for Certification and State Registration of Methods of Conducting Forensic Examinations, methodologies for conducting forensic examinations (except forensic-medical and forensic-psychiatric ones) are subject to certification and state registration in the manner prescribed by law by being included in the Register of Forensic Examination Methods.

In addition to the methods, the arsenal of cognitive tools includes other sources of information used by a forensic expert, such as legal acts and regulatory documents (international, national and industry standards, specifications, rules, regulations, provisions, instructions, recommendations, lists, guidelines of the State Consumer Standard of Ukraine), as well as the current republican standards of the former Ukrainian SSR and state classifiers, industry standards and specifications of the former USSR, etc. If necessary, information from scientific,

technical and reference literature, the list of which is approved by the order of the Ministry of Justice of Ukraine, may also be used during the examination ²⁵. It is also worth noting that the choice of the method of conducting forensic examination is the prerogative of the expert, who (in addition to the aforementioned sources of information) may also apply others belonging to the scientific or technical knowledge of a particular field of science and technology.

Therefore, the analysis of literary and regulatory legal sources and the results of surveys of forensic experts allow reaching the conclusions presented below.

Conclusions

The method, as an important component, belongs to the structure of the methodology of forensic examination. A scientifically substantiated methodology of any cognitive process is the cornerstone that contributes to the construction of an algorithm for performing forensic tasks, namely, the development of expert examination methodology and its implementation in expert practice.

Among other methods of forensic examination, differentiated into general, specific, and special, there is the method of surveying as a general method of cognition: the results of its application have made it possible to develop certain recommendations aimed at increasing the efficiency of forensic activities in organizational and general-methodological issues of forensic examination.

24 Порядок атестації та державної реєстрації методик проведення судових експертиз : затв. постановою КМУ від 02.07.2008 р. № 595 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/595-2008-%D0%BF#Text> (date accessed: 25.02.2024).

25 Про затвердження переліків рекомендованої науково-технічної та довідкової літератури, що використовується під час проведення судових експертиз : наказ Мініюсту України від 30.07.2010 р. № 1722/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/v1722323-10#Text> (date accessed: 25.02.2024).

Methods and techniques of research can be considered a certain specification of the method of cognition. Expert methodology is a combination of methods, techniques, and means of performing an expert task on one hand, and on the other hand, a special method of forensic examination.

The integrative processes occurring in the modern stage of forensic examination development provoke active discussions about complex forensic investigations. Due to the complexity and regulatory ambiguity of provisions regarding complex expert investigations, questions regarding the mechanisms of appointment and conduct of complex forensic examinations and sets of examinations within one criminal proceeding remain debatable to this day. It is also advisable to develop forensic sciences formed on the basis of integrative processes in forensic science.

The proposals for supporting exclusively licensed activities in training expert personnel, both in higher education institutions and at the level of scientific institutions (including forensic science), are justified.

The author's definition of the concept "forensic science in criminal proceedings" is proposed: it is the examination by a forensic expert of material (materialized) objects with the aim of providing conclusions on issues that are or will be the subject of judicial consideration for the clarification, based on the use of specific expertise in the fields of science, technology, art, crafts, etc., of factual data and circumstances of criminal proceedings regarding certain objects, phenomena, and processes that occurred (were used) during the preparation, commission, and concealment of criminal offenses.

The need to develop methods for complex forensic examinations of all possible types and a regulatory legal

act on the appointment and conduct of complex forensic examinations has been undoubtedly proved.

A pressing issue for ensuring the proper level of forensic activity in our state (aside from regulatory problems, the need to improve theoretical and methodological foundations, material provision for forensic experts, and increasing funding to enhance instrumental resources) is the unlawful influence (pressure) on a forensic expert aimed at inducing them to provide a knowingly false conclusion or to refuse to fulfill their duties assigned to them.

The motivation and influential factor for preventing offenses in the field of forensic activity is the increase in remuneration, monetary and pension provision of a forensic expert, and the improvement of norms for their social protection.

Taking the above into account, we propose:

1) Article 386 of the Criminal Code of Ukraine shall be amended to read as follows:

"Article 386. Obstructing the appearance in court, participation in the court hearing of a witness, victim, expert, specialist, forcing them to refuse to give testimony or an opinion, pressure on an expert to persuade him/her to commit other illegal actions

Obstructing the appearance of a witness, victim, expert, or specialist in court, pre-trial investigation bodies, temporary investigators, and a special temporary investigative commission of the Verkhovna Rada of Ukraine, forcing them to refuse to give testimony or a conclusion, or to give deliberately false testimony or a conclusion by threatening them with murder or violence, destruction of property of these persons or their close relatives or disclosure of information that defames them, or bribery of a witness, victim or expert for the same purpose, pressure on a forensic expert to commit other illegal actions related

to the performance of his/her duties, as well as threats to commit the said actions in retaliation for previously given testimony or conclusion shall be punishable by a fine of fifty to three hundred tax-free minimum incomes, or correctional labor for a term up to two years, or arrest for a term up to six months, or restraint of liberty for a term of one to three years with disqualification to hold certain positions or engage in certain activities for a term up to three years”;

2) Paragraph 1 of Clause 4.1 of Section IV of the Instruction on the Appointment and Conduct of Forensic Examinations and Expert Studies shall be set forth in the following wording:

“4.1. If an expert institution is appointed to conduct an expert examination, the head of such institution shall entrust the examination to one or more experts. These experts shall provide an opinion on their own behalf and be personally responsible for it”.

Анкетування як метод наукового пізнання та його вплив на формування методології судово-експертних дорожньо-технічних досліджень

Євген Півнюв

Здійснено аналіз основних термінів (понять) із питань методології судово-експертного дослідження та результатів анкетування судових експертів. Метою статті є аналіз методів судово-експертних досліджень як підґрунтя для побудови алгоритмів виконання завдань судової експертизи. За результатами анкетування судових експертів визначено основні положення організації проведення судової експертизи загалом та судової дорожньо-технічної експертизи зокрема, які стануть у пригоді для побудови загальних методичних положень дорожньо-технічних досліджень. Ззна-

чено, що прийоми та способи дослідження можна вважати певною конкретизацією методу пізнання. Експертна методика є сукупністю методів, прийомів і способів (засобів) виконання експертного завдання з одного боку, а з іншого — спеціальним методом судової експертизи. Для аналізу результатів анкетування застосовано комплекс методів наукового пізнання (зокрема, загальнонаукових). У зв'язку зі складністю й нормативно-правовою неврегульованістю положень про комплексні експертні дослідження запропоновано зміни до нормативно-правових актів, які обумовлюють механізм оформлення комплексу експертиз і комплексної експертизи як різних форм інтегрування спеціальних знань. Розглянуто питання подальшого формування судових наук. Наголошено, що знання теорії судової експертизи та процесуальних питань здійснення судово-експертної діяльності мови є запорукою належного рівня професійної підготовки судових експертів. Наведено авторське визначення поняття судової експертизи в кримінальному провадженні й узагальнено пропозиції судових експертів із підвищення ефективності судово-експертної діяльності.

Ключові слова: спеціальні знання; судовий експерт; метод, методологія, судово-експертна методика; висновок експерта; досудове розслідування; статистичні дані; судова дорожньо-технічна експертиза; дорожня інфраструктура.

Financing

This research did not receive any specific grant from funding institutions in the public, commercial or non-commercial sectors.

Disclaimer

Founders had no role in the study design, data collection and analysis, decision to publish, or manuscript preparation.

Participants

Author contributed solely to the intellectual discussion underlying this document, case law

research, writing and editing and assumes responsibility for its content and interpretation.

Declaration of Competing Interest

Author declare no conflict of interest.

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