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# CUESTIONES POLÍTICAS

Instituto de Estudios Políticos y Derecho Público "Dr. Humberto J. La Roche"  
de la Facultad de Ciencias Jurídicas y Políticas de la Universidad del Zulia  
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## Use of certain special knowledge in the investigation of murders

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*Oleksandr Kravchenko* \*  
*Oleksandr Zherebko* \*\*  
*Ruslana Zaveryko* \*\*\*  
*Antonina Velmozhna-Sydorova* \*\*\*\*  
*Tetiana Chashnytska* \*\*\*\*\*

### Abstract

The article analyzes the current problems of using certain special knowledge in the investigation of murders. The essence and basic forms of special forensic knowledge (participation of a specialist in conducting investigative (search) actions, consultations of specialists, conducting forensic examinations) used in the process of investigation of these criminal offenses are determined. Emphasis is placed on the expediency of more frequent use of such types of expertise as phonoscopic, soil science and handwriting, the theoretical foundations and methodological basis of which need to be updated and adjusted to take into account the latest techniques and leading world practices. It is concluded that the level of development of relevant methodological recommendations in Ukraine in the field of phonoscopic, soil science and handwriting, their lack of focus on today's problems of investigative and judicial practice. The solution to this problem will be facilitated by the development at the state level and updating of the training program for novice experts, which should include a thorough study of both classical and modern methods and techniques, advanced foreign experience, which will expand the professional worldview research

\* Candidate of legal sciences, Assistant Professor, Associate Professor at the Department of Criminal Law, Procedure and Criminalistics, Classic Private University, Kyiv, Ukraine. ORCID ID: <https://orcid.org/0000-0001-9798-5309>

\*\* Candidate of legal sciences, Head of the department of normative and methodical activity and standardization, Kyiv Scientific Research Institute of Forensic Expertise, Kyiv, Ukraine. ORCID ID: <https://orcid.org/0000-0002-9740-4145>

\*\*\* Postgraduate student at the Department of Criminal Law, Procedure and Criminalistics, Classic Private University, Kyiv, Ukraine. ORCID ID: <https://orcid.org/0000-0002-8163-8625>

\*\*\*\* Forensic expert of the Kharkiv scientific research forensic center of the Ministry of Internal Affairs of Ukraine, Kharkiv, Ukraine. ORCID ID: <https://orcid.org/0000-0002-2313-3530>

\*\*\*\*\* Postgraduate student at the Field Information Technology Laboratory of Information Technology and Cybersecurity Department Educational Research Institute № 1 of the National Academy of Internal Affairs, Senior Forensic Expert of Photographic and Portrait Research Department, Research in the Field Information Technology Laboratory State Scientific Research Forensic Center of Center Ministry of Internal Affairs, Kyiv, Ukraine. ORCID ID: <https://orcid.org/0000-0001-9092-508X>

in proving the circumstances of committed criminal offenses, including murder.

**Keywords:** special knowledge; murder investigation; phonoscopic; soil science; handwriting.

## Utilización de ciertos conocimientos especiales en la investigación de asesinatos

### Resumen

El artículo analiza los problemas actuales del uso de conocimientos especiales en la investigación de asesinatos. Se determina la esencia y las formas básicas del conocimiento forense especial (participación de un especialista en la realización de acciones de investigación (búsqueda), consultas de especialistas, realización de exámenes forenses) utilizados en el proceso de investigación de delitos penales. Se hace hincapié en la conveniencia de un uso más frecuente de tipos de conocimientos especializados como la balística, la ciencia del suelo y la escritura a mano, cuyos fundamentos teóricos y metodológicos deben actualizarse y ajustarse para tener en cuenta las últimas técnicas y prácticas de vanguardia. Se concluye que el poco nivel de desarrollo de las recomendaciones metodológicas relevantes en Ucrania en el campo de la balística, la ciencia del suelo y la escritura a mano, demuestran la falta de enfoque en los problemas actuales de la práctica judicial e investigadora. La solución a este problema se verá facilitada por la actualización del programa de capacitación para expertos novatos, que debe incluir un estudio exhaustivo de métodos y técnicas clásicas y modernas, experiencia internacional avanzada, que ampliará la cosmovisión profesional.

**Palabras clave:** conocimiento especial; investigación de asesinatos; balística; ciencias del suelo; caligrafía.

### Introduction

Article 3 of the Constitution of Ukraine declares that a person, his life and health, honor and dignity, inviolability and security are recognizing as the highest social value (Constitution of Ukraine, 1996). In the modern period, the judicial and law enforcement system is being reform, measures are take to increase the efficiency of the National Police of Ukraine, a high-quality law enforcement service is create, and effective mechanisms for combating crime are being proposed. Changes in the socio-political and

economic sphere of the country have not only positive changes, but also some negative trends: lowering the level of social security, criminalization of certain segments, increasing registered unemployment, senseless manifestations of aggression and cruelty. There are changes in the structure of criminal activity and the emergence of new criminal manifestations, an increase in serious violent crimes. In this sense, there are some difficulties in counteracting serial (cell) killings (Kupyansky, 2016).

Given the acquisition of new and particularly dangerous forms of criminal activity, on the one hand, and the reform of criminal justice, adaptation of Ukrainian legislation to the European - on the other, the issue of analysis of theoretical basis and study of forensic practice is relevant (Simakova-Efremyan *et al.*, 2007) to identify problematic issues that exist in the investigation of murders, and on this basis - to develop ways to solve these problems. After all, there is no doubt that some knowledge of experts is increasingly in demand during the pre-trial investigation and trial of criminal proceedings for crimes of this kind. In this aspect, one of the most important tasks is to determine the nature and capabilities of certain types of expertise in the investigation of murders. This is what determines the need and relevance of such research.

### **1. Methodology of the study**

The methodological basis of the scientific article is the theory of cognition and methods of cognitive activity. Research methods are represented by a system of general scientific and special scientific methods, which are selected in accordance with the topic, purpose and objectives of the article. The following methods were used in the work: dialectical (to outline the general concept and structure of the study; formal legal (to analyze the rules of criminal procedure and other regulations related to the peculiarities of the appointment and examination); dogmatic (legal) and method of analysis of definitions - to deepen the understanding of the definition of special knowledge, firearms, soil science and handwriting, functional (to determine ways to optimize the use of special knowledge in phonoscopic, handwriting and soil science in the investigation of killings, and experts, organizational and other activities), historical (to study the development of scientific ideas about the possibility of using certain expert research in the investigation of murders), sociological (in order to study and generalize investigative and judicial practice on the use of special knowledge during homicide investigations).

## **2. Analysis of recent research**

The theoretical basis of the study of the problem of using special knowledge in the investigation of murders were the fundamental works of M. Saltevsky (Saltevsky, 2005), V. Cirkal (Cirkal, 1984), V. Goncharenko (Goncharenko, 1980), V. Loginov (Loginova, 2009), S. Cherniavskiy (Cherniavskiy, 2017), E. Simakova-Efremyan (Simakova-Efremyan, 2017), M. Kostenko (Kostenko, 2006), S. Kustanovich (Kustanovich, 1956), V. Mitrichev (Mitrichev, 1980), T. Averyanova, E. Rossinskaya (Averyanova and Rossinskaya, 1999), T. Tatarnikova (Tatarnikova, 2016) and other scientists.

However, to date, some aspects of the practical nature have not been sufficiently elucidated, in particular these issues related to the possibilities of conducting such examinations as phonoscopic, handwriting and soil science in the investigation of murders. In view of this, there is a need for a detailed theoretical analysis of these insufficiently studied types of examinations. In addition, science (as well as society) is constantly evolving, improving the scope of human activity, there are new ways to influence the life and health of the person, which requires the introduction of new types of forensic examinations, improving the methodology of their conduct.

The purpose of the article is to reveal the theoretical provisions and practical recommendations for the use of certain special knowledge in the investigation of murders. According to the defined purpose of the scientific article, the tasks are: definition of the concept and «special knowledge» used in the investigation of murders; obtaining a general idea of the forms of special knowledge used in the investigation of crimes in this category; outlining the features of phonoscopic, handwriting and soil science examination in the investigation of murders.

## **3. Results and discussion**

### **3.1. General characteristics of special knowledge used in criminal proceedings**

The interpretation of “special knowledge” is currently debatable. This is facilitating by the lack of a legislative definition of the concept of special knowledge and the legislator indicates only the purpose and subject of application of special knowledge.

It is widely believed in the doctrine that the term “special knowledge” used in criminal procedure law in the sectoral legal sense to distinguish well-known knowledge from the professional knowledge of professionals used, when necessary, in the investigation of crimes” (Cirkal, 1984). Under

special knowledge M. Saltevsy understood constantly improved acquired knowledge, skills and abilities used in any field of human activity, obtained in the process of special education, experience and practical activities (except for the professional knowledge of investigators), necessary for rapid and complete disclosure and investigation of the crime, as well as consideration of the case in court (Saltevsy, 2005). V. Goncharenko in his monograph notes that “special knowledge is knowledge in science, technology or art, used to obtain evidence by specially trained persons” (Goncharenko, 1980: 114).

We suggest that the special forensic knowledge used in the investigation of murders include information on forensic tools and methods of detection, recording, seizure and investigation of material traces of these crimes and other material evidence used in the course of expert, investigative or judicial activities, enshrined in various material sources, carriers of this information.

Special knowledge in the detection and investigation of criminal offenses used in two forms: procedural and non-procedural. The main purpose of their application is timely obtain from the specialist forensic information relevant to the investigator, which allows you to correctly choose the order, time and place of investigative (investigative) actions and covert investigative (investigative) actions, select its participants, scientific and technical means, choose tactics and properly navigate the situation. Cases of intentional and unintentional deprivation of life are not an exception in this aspect.

Experts and specialists apply special knowledge in a certain field, and the investigator, prosecutor and investigating judge use it in the form of involving a specialist in conducting investigative (search) actions, appointing forensic examinations, providing advisory assistance and more. The main purpose of involving a specialist is to expand the practical capabilities of the investigator, prosecutor in identifying, seizing and recording evidence during investigative (search) actions to establish the circumstances to be establish in criminal proceedings. The activity of an expert differs significantly from the activity of a specialist in that the expert is a special procedural figure, and the task of the examination is to analyze certain data in order to establish new facts relevant to the pre-trial investigation. In addition, the expert’s opinion has probative value.

The main subject of application of special knowledge in the form of forensic examination is an expert. Procedural status, rights, responsibilities, the role of the expert, certain requirements and guarantees of his independence, responsibility are defined by the Criminal Procedure Code of Ukraine (Criminal procedural code of Ukraine, 2012), Instruction on appointment and conduct of forensic examinations and expert examinations, approved by the Order of the Ministry of Justice of Ukraine dated 08.10.1998 N<sup>o</sup> 53/5

(Instruction on appointment and conduct of forensic examinations, 1998), Regulations on the service of the Ministry of Affairs of Ukraine, approved by the Order of the Ministry of Internal Affairs of Ukraine dated 03.11.2015 № 1343 (Regulations on the expert service of the ministry of internal affairs of Ukraine, 2015).

According to Art. 1 of the Law of Ukraine «On forensic examination», forensic examination is a study based on special knowledge in the field of science, technology, art, craft, etc. of objects, phenomena and processes in order to provide an opinion on issues that are or will be subject to trial (Law of Ukraine «On forensic examination», 1994).

Procedural grounds for the examination are defined in Article 242 of the Criminal Procedure Code of Ukraine, according to the first part of which the examination is conducted by an expert at the request of a party to criminal proceedings or on behalf of an investigating judge or court, if special circumstances knowledge. The factual basis for the appointment of an examination is the need for scientific, technical or other special knowledge that is needed to address certain issues in criminal proceedings (Criminal procedural code of Ukraine, 2012). The results of the examinations are made out by the expert's opinion, which must meet the criteria of belonging, admissibility and reliability.

Forensic science has a strong evidentiary value in the process of investigating murders and uses a wide arsenal of modern methods and scientific and technical means that significantly expand the possibilities of obtaining evidentiary information. According to the results of the study of criminal proceedings, we have identified the following shortcomings in the appointment of forensic examinations in the investigation of murders: inaccurate questions to the expert; errors during the seizure, packaging and storage of physical evidence, which are then submitted for expert examination; untimely appointment of forensic examinations; lack of knowledge and information about (new) types of forensic examinations, their capabilities and features of appointment. To avoid such shortcomings, it is necessary to consider the types, possibilities and significance of forensic examinations that may be assigned during the investigation of cases of deprivation of life.

The following types of examinations are important in the investigation of crimes of this category: forensic, forensic psychological, dactyloscopic, trasological, ballistic, cold steel, complex forensic, phonoscopic, immunological, cytological, genetic, odorological, handwriting, soil. For example, if it is necessary to study the state of the accused, which affects his consciousness and actions, and the time of the crime, to determine the various properties of the mental state or other individual psychological characteristics of the victim, suspect or witness during the pre-trial investigation may be appointed forensic expertise.

The decision of the forensic psychological examination is to find out from the suspect the state of affect at the time of the crime. According to statistics, forensic medical examination is most often carried out, the importance of which is that in the process of its conduct a causal link is established between the actions of the suspect (accused) and the negative consequences that caused the death of a person. Forensic medical examination establishes the cause of death, the presence of injuries, severity, nature, mechanism, location, method and duration of their formation, prediction of negative consequences and more.

These and other examinations are typical, such that are studied in detail in the scientific literature, so we consider it appropriate to focus on the possibility of forensic examinations, which are rarely appointed by investigators in the investigation of murders, because their capabilities and evidence are often unfairly ignored. practice. These include phonoscopic, handwriting and soil expertise.

### **3.2. Examination of audio and video recording**

Intensive filling of public life with various technical means of communication has actualized the development of examination of audio and video recording. To date, the expert's report is evidence in criminal proceedings related not only to extortion, blackmail, corruption and terrorism, but also to murder, attempted murder, other crimes against life and health, etc. Examination of audio and video recordings belongs to the class of forensic examinations. Within the limits of expert specialties the main tasks of examination of sound and video recording are carrying out of technical examination of materials and means of sound and video recording; research of the speaker on physical parameters of oral speech, acoustic signals and environments; linguistic study of oral speech.

The essence of examination of materials and means of digital sound recording is to use an integrative set of special knowledge in the field of phonoscopy to investigate traces of sound, mechanism and methods of its reflection and fixation on digital media, properties of sound information reflected in the sound signal. Forensic examination of video recording is carried out in order to identify a person on the basis of voice and speech, as well as to identify the means of recording (video recording) (Averyanova and Rossinskaya, 1999).

In connection with the above, T. Tatarnikova proposed the following definition of the subject of examination of materials and means of digital sound recording - is the establishment of instructions of the parties to criminal and civil proceedings facts and circumstances related to the laws of formation and study of reflections of audio information on digital media value for proof. The content of the subject of examination of materials and

means of digital sound recording taking into account its procedural and epistemological aspect is the study of specific properties of objects of sound origin, their relationship with the phenomena of reality and functionally related processes, carried out within the current legal norms a set of methods for obtaining evidentiary information in criminal proceedings (Tatarnikova, 2016).

In the investigation of murders, the tasks of examination of materials and means of digital sound recording according to the methodological principle are divided into three main blocks: identification; diagnostic; classification. Identification tasks of examination of materials and means of digital sound recording are directed on identification of object on its display. Identification tasks are related to: the identification of specific sources of sound traces other than voice and speech signals with the identification of the person by voice and speech, recorded on the phonogram; less often - with the identification of a specific means, reception, transmission and recording of an audio signal, etc.

Diagnostic tasks are aimed at: differentiating the participants of the conversation on the basis of voice and speech, which differ; establishing the suitability of the speech signal for identification examination; clarification of the textual content of the proclaimed statements; establishing the fact of an unusual state of the speaker. Classification tasks are: diagnostics of terrain or acoustic characteristics of the room according to the properties of the sound environment; diagnostics of acoustic information sources, etc. In the investigation of murders, the specified tasks of examination of materials and means of digital sound recording can be detailed for each stage of examination.

It is known that the effectiveness of the detection and investigation of crimes is directly dependent on the successful interaction of pre-trial investigation bodies, operational units, expert service. Criminal proceedings for murder are no exception in this respect. Most often, the results of forensic examination of audio and video recordings, on the basis of which the persons involved in the commission of crimes are identified, are the only direct evidence in criminal proceedings (Maksymenko, undated). We consider it expedient to detail some problems of interaction of the specified subjects from the position of the forensic expert who solves a problem on revealing of the useful speech information at performance of forensic examination of video, sound recording at investigation of murders.

For a more detailed study of the means and materials of video recording, their preliminary research is often carried out. As a result, additional information can be obtained, which allows you to write the following questions: put forward new and check existing investigative versions; build tactics for conducting separate investigative actions; to decide on the involvement of the object in the case as verbal evidence, on the appointment of a forensic examination.

One of the important conditions for the preliminary study of physical evidence is the use of such methods that ensure the preservation of physical evidence in its original form. Preliminary research is usually the logical conclusion of the review. After examination and preliminary examination of the physical evidence, the question of the appropriateness of the appointment of the examination is raised. In the decision when appointing a forensic examination of the means and materials of the video recording in the investigation of the murders, the investigator may reflect the following questions: what is the content of the plots of the video presented for investigation; whether this video was made using the presented device; whether the presented video contains signs of editing; whether the image and sound were recorded simultaneously on the presented video, and so on.

When selecting an expert for the examination of means and materials of video recording in such high-profile criminal proceedings, the competence of the future expert in the field of criminology, television, video equipment is taken into account. It should also be remembered that if the expert concludes that the samples of voice and speech of the person do not meet the requirements, the expert sends a request to the initiator to provide additional samples of voice and speech of the person, which significantly affects the time of examination (Law of Ukraine «On forensic examination», 1994).

It should also be noted that one of the methods that is actively used by psychologists-experts in their work is the method of «Forensic psychological examination of the communicative activity of a person recorded in the video». It allows you to fully determine the features of speech behavior of the subject (Khalyavka and Tulvinskaya, 2020: 145).

Thus, we conclude that the examination of audio and video recordings is essential for the investigation of murders, in particular for establishing the criminal event, the identity of the murderer, the degree of his guilt and other circumstances to be proved. In order to optimize the progress of the homicide investigation before the examination, an expert should be consulted on the optimal wording of the questions regarding the speech and video material to be investigated.

### **3.3. Forensic soil expertise**

One of the sources of evidence in the investigation of criminal offenses against the life and health of a person may be the opinion of an expert on the results of forensic examination. It belongs to the kind of examinations of materials, substances and products, in which the research of material evidence of soil and geological-mineralogical origin is carried out.

Forensic examination is a multi-stage comprehensive study, and the assessment is conducted after each stage of the study, taking into account

knowledge in the field of soil science and related sciences (natural science assessment) and in forensics (forensic assessment). Natural science assessment is carried out in terms of classification, taxonomy and other structural units of soil science, geology, biology and other sciences. Forensic assessment involves the transformation of the results of scientific assessment in accordance with special knowledge in the field of forensic identification theory.

With the help of forensic soil examination, identification, diagnostic and situational tasks are solved. Identification of the site is one of the main tasks of forensic soil examination. Among the facts that can be established by solving the problems of this type of examination are such important elements of evidence as identification of the area where the criminal event took place, and the fact of contact interaction of any objects contaminated with soil, diagnosis of an unknown scene and so on.

Objectivity, comprehensiveness and completeness of expert research means an unbiased assessment of the properties of objects and phenomena, conducting research on a scientific and practical basis, which eliminates errors, avoiding unreasonable judgments or expanding the subject of examination. The expert's opinion should be based on the provisions that allow to verify the validity and reliability of conclusions made on the basis of special knowledge in soil science, geology, petrography, mineralogy, chemistry, physics and other sciences, which are used in this type of examination.

At one time V. Mitrichev introduced into the examination of materials of substances and products the concept of «element of the material situation», which can be understood as a separate material object that is part of the material situation of the event under investigation: object (whole), material formations in the form of liquid, loose or gaseous substances, as well as their parts and traces (Mitrichev, 1980). By their nature, material evidence is material objects that arose in connection with the event of a criminal offense or were used during its commission, preparation for it, etc.

Based on this, the objects of study in the appointment of forensic soil examination may be a variety of objects of soil and mineral origin - it is directly soils, in the form of clay, sand, gravel, limestone, chalk, gypsum, coal, slag, etc., and in in the form of layers on the objects-carriers, exfoliations left at the scene, as well as samples of specifically localized areas.

The specificity of soil-geological objects as elements of the material situation in the framework of forensic identification research is determined by the actual circumstances of the offense (Omelyanyuk, 2004).

The soil-geological object submitted for forensic examination has a dual structure: it contains elements that determine its natural origin, as well as others that separate it as a material formation from various soil-geological and sometimes anthropogenic components.

V. Koldin points out that depending on the level of individualization achieved in the process of research, genus, species, group and individual identification differ. The ultimate goal of identification is to address the question of the identity of a single person, object, material complex (Koldin, 2002).

However, this goal is not always achieved. If the comparative study reveals only classification features, the study is limited to generic identification. In some cases, the structure of the identified object reveals properties that arose in the circumstances of a particular case or mechanism of the event under investigation. Such properties may be the basis for the allocation of special classes or groups that significantly deepen the levels of group identification. Individual identification requires the identification of features, the set of which is unique, inimitable. Thus, the identity of objects in the assessment of forensic soil examination is assessed by generic, group and individualizing characteristics.

Studying the methods of investigating crimes against life, V. Kolmakov distinguished between the method of committing a crime and the method of concealing it. Thus, to the first he attributed the actions and omissions aimed at achieving a criminal result, as well as the material objects with which the crime was committed, the conditions convenient for the offender. The method of concealment was considered by the researcher as the actions of the criminal aimed at masking and eliminating the traces of this crime (Kolmakov, 1956). Forensic examination can be used as a means of committing, for example, moving a corpse or living persons, a person staying in a certain area, as well as a way of hiding, usually burying a corpse or its parts, burying objects of a criminal offense.

In criminal offenses, the generic object of which is the protection of life and health of a person, the forms of use of special knowledge are the involvement of a specialist and the appointment of a forensic examination. Consider the practical application of specialized knowledge in the field of soil science in the investigation of premeditated murder.

Thus, the verdict of the Donetsk Court of Appeal established that the accused A. and B. illegally took possession of a Toyota Avensis car and killed its owner V. with the use of firearms. and other persons, as well as ammunition left in them after the commission of these crimes, and then buried them in the ground in various places, for the purpose of concealment and further illegal storage. The conclusions of forensic soil examinations with diagrams and photo tables confirmed that the soil removed from the mat near the driver's seat of the accused A.'s car has a common ancestral and group affiliation with the soil removed from the surface of a small bayonet shovel and the soil removed during inspection. The soil removed from the surface of the large bayonet blade has a common genus with the soil removed during the search of the car belonging to A., have a common

genus with the soil removed during the inspection (Judgment of the Donetsk Court of Appeal in case 235/661 / 14-k).

In another case, A.'s Kharkiv District Court found A. guilty of intentionally killing B. and illegally seizing her laptop. soil samples for forensic examination, investigative experiment, presentation of the corpse for identification, search of A.'s place of residence, during which material evidence was seized. The conclusion of the forensic soil examination with illustrative tables to it established that the soil layers removed from the bayonet shovel and soil samples removed from the burial place of the corpse, and one of the samples removed at the place of its discovery, are characterized by common genus and common group affiliation (Judgment of the Kharkiv District Court of the Kharkiv Region in the case № 2034/13730/2012).

Thus, forensic examination should be ordered in the investigation of premeditated murders, when it is necessary to establish whether the corpse was reburied, whether the person was alive in a certain area if the corpse's shoes preserved layers of soil, whether there was contact with the victim's clothes and certain contact object (for example, vehicle bumper), with which tools (shovels, crowbars) the corpse was buried, as well as whether the suspect was in the area where the corpse was found, whether the corpse was moved from one part of the area to another, in what way (rolling, dragging, etc.) and how many people were moved. Establishing the number of co-perpetrators contributes to solving the problems of criminal proceedings under Art. 2 of the Criminal Procedure Code of Ukraine (Criminal procedural code of Ukraine, 2012), which is also provided for in paragraph 3 of the resolution of the Plenum of the Supreme Court of Ukraine «On judicial practice in cases of crimes against life and health» of February 7, 2003 № 2 (Resolution of the Court of Ukraine «On judicial practice in cases of crimes against life and personal health», 2003).

The main problematic issues that arise when inspecting the scene are the correct removal of soil samples, clothing, footwear and other items that have layers of soil and mineral origin. Practice shows that most physical evidence is seized without complying with the mandatory conditions for its preservation during transportation and storage. Also, there are cases of incorrect determination by investigators of the spatial boundaries of land plots, which leads to incorrect removal of control samples.

As a result, further forensic examination does not contribute to the localization of a certain area. Improper packaging of physical evidence, especially when clothes and shoes are packed together, leads to rash and contamination of the layers, which negatively affects the results of a comparative study. That is why the involvement of a specialist in the inspection of the scene is a prerequisite for the collection of appropriate evidence, and on the other hand it facilitates the work of a forensic expert, who will then conduct a forensic examination.

In the process of forensic soil examination (selection of the study scheme and evaluation of the results) it is necessary to take into account the completeness of the reflection of soil layers on the objects and preservation in the layers of initial indicators during operation of objects with layers and removing them for research. Thus, the evaluation process in forensic soil science examination is heuristic in nature and cannot (except for the main stages) be programmed in advance.

Each expert study of soil-mineral substances requires a creative approach taking into account all the features of the objects of identification, including the suitability of the site for localization and identification, the identification significance of signs, the presence of sufficient soil layers and preservation of initial indicators, matching properties all components and impurities in comparable soils, etc.

### **3.4. Forensic handwriting examination**

The generalization of expert practice in criminal proceedings on murders indicates the presence of significant shortcomings in the preparation and execution of materials for forensic handwriting examination. In particular, copies or technical images of documents are often provided for forensic handwriting examination of manuscripts and signatures. However, such examination is carried out exclusively on the basis of original documents.

A common shortcoming in the appointment of the examination is the direction of materials for its conduct, which does not specify which documents are subject to study, in which columns are the handwritten record or signature, as well as which documents contain samples of handwriting and signature of a person that the expert could use for comparative research.

At the same time, according to Article 69 of the Criminal Procedure Code of Ukraine, an expert has no right to collect materials for examination on his own initiative (Criminal procedural code of Ukraine, 2012). Assignment of documents to the objects of research, as well as to the handwriting and signatures of a certain person is beyond the powers of the expert and belongs exclusively to the competence of the body (person) that appointed the examination.

One of the most common shortcomings is the lack of comparative materials, both in terms of quality and in terms of quantity, non-compliance with the requirements for compliance of the samples with the studied documents under the conditions of execution (similar writing instrument, pose, lighting, etc.), not the reliability of comparative samples is checked by comparing them with each other. In accordance with paragraph 1 of part 1 of Article 13 of the Law of Ukraine «On Forensic Examination», the expert has the right to submit a request for additional materials, if the examination is appointed by a court or pre-trial investigation body or

review case materials concerning the subject of forensic examination (Law of Ukraine «On forensic examination», 1994).

The body (person) that appointed the expertise (involved the expert), who ignores the experts' requests for the necessary materials and insists on conducting the expertise on the provided materials, deliberately puts the expert in a situation of possible erroneous conclusions or necessity refusal to resolve the issue.

Poor quality comparative material is usually found when courts appoint forensic handwriting examinations to examine the signatures of the elderly and senile, in wills, gift agreements and applications for revocation of wills. This is reflected in the incomparability of the samples in comparison with the investigated signature by transcription, time or conditions of execution and the absence of free and experimental samples of signatures of the probable person, as well as the insufficient number of free samples of signatures of this person (Bilous, 2019).

A common drawback is the violation of the tactics of sampling. A significant violation of the method of taking handwriting samples and signatures is to provide the person from whom the experimental samples are taken, the opportunity to reproduce the handwriting object from the document under study, which is strictly prohibited. When taking free and experimental samples of handwriting and signatures made in unusual conditions, or in an unusual way, only in some cases, specialists with special knowledge in the field of handwriting are involved. Thus, only with its help it is possible to most accurately establish the pace at which the text of the studied document was performed.

We consider it expedient to outline the peculiarities of conducting expert research in the field of handwriting in criminal proceedings on murders.

Changes in external and internal factors influencing the formation of handwriting have significantly changed the structure (structure) of handwriting in modern society, which requires adjustment of a number of characteristics of the general features of handwriting. Insufficiently studied objects of research are handwritten texts and signatures made by the left hand with natural shulga, and should also be finalized. Therefore, at the present stage in forensic handwriting there are two main areas of research of altered handwriting: the establishment of the fact of unusual execution of the manuscript and the identification of the executor of the altered handwriting.

Along with manual methods in handwriting research, recently, more often used machine methods of analysis of features in the compared handwriting (signatures). Experiments are conducted on the use of image recognition algorithms in handwriting research, as well as to establish the authorship of anonymous texts. The handwriting of a certain person as

a whole, as well as individual written signs, which together constitute an individualized complex, represent an image (Kravchenko, 2019).

In addition, handwriting can change under the influence of external factors, such as alcohol or drug intoxication. The study of the peculiarities of writing and written speech of persons under the influence of toxic (including pharmaceutical) substances should be recognized as promising. There is an objective need for in-depth study of the handwriting of persons for whom the left hand is the leader. After all, the number of such people is steadily growing. Here, too, the multidisciplinary nature of handwriting science will be manifested, because knowledge should be applied not only purely handwriting, but also pedagogical, partly medical, psychological, with a collection of extensive experimental material (Savchuk, 2019).

Of particular note is the study of the impact of mental illness on writing. The progressive level of development of forensic psychiatry, the availability of new methods of treatment and the release of new pharmaceuticals to overcome this category of diseases makes handwriting experts interested in this topic in parallel with specialists - psychiatrists. Another separate type of multidisciplinary research should be considered the impact on the handwriting of the psychological state of the performer. Graphology as a scientific discipline has experienced better and worse times, but in Europe it is now experiencing a «second life».

For example, in France, while studying at university, students study graphology in order to take tests at employment or in vocational guidance institutions. In Italy, graphologists (as handwriting psychologists) and handwriting experts study together. This seems logical, as handwriting scholars should be interested in psychology for a more thorough study of writing. However, it should be recognized that there are not always significant links between a person's mental state and his or her handwriting. Emotional factors may affect the writing skill, but due to the strength of the individual, the firmness of his character, such factors may not be reflected in the handwriting or signature (Savchuk, 2019).

One of the tasks of scientists is to develop an electronic computer that can recognize the handwriting of an individual among many different handwritings. Therefore, in cases where the eyes of an expert in the comparative study of some handwriting objects are an imperfect tool, the problem of creating a more perfect apparatus of distinction, which would work in areas and ranges inaccessible to direct visual perception of man.

The experiments conducted on cybernetization of handwriting research are based on the principle of creating a machine that would first memorize handwriting patterns (learn), and then, learning to distinguish them, perform recognition. It is determined that of the research in the direction of creating model and automated methods used in handwriting examination

in the modern post-Soviet space, the most interesting are the developments of criminologists of Ukraine, who first began to create and use expert systems in forensic handwriting examination (Kravchenko, 2019).

The complex nature of the methodological tools used means that the process of solving the tasks of forensic handwriting examination includes a variety of methods: qualitative-descriptive, quantitative, model (mathematical), instrumental, as well as the use of modern computer technology.

We consider the scientific support of expert activity in the field of soil science to be an indisputable positive in the investigation of criminal offenses, including those whose object is encroachment on the life and health of a person. One of such steps is the development of a manual in which, based on the latest advances in science, in accordance with the requirements of expert practice, it is necessary to highlight the theoretical foundations of forensic handwriting, the concept of written language and handwriting, modern classification of writing, provide general and most common methods of identification, to consider diagnostic and situational researches of handwriting, methods of mathematical modeling which are applied at the decision of various handwriting problems. Detailed research and solution of the above issues will significantly expand the possibilities of forensic handwriting and increase the efficiency of experts in the field of handwriting examination (Kravchenko, 2019) both in general and in the investigation of certain types of crimes in particular.

## **Conclusions**

Summarizing the above, we can draw the following main conclusions:

1. Special forensic knowledge used in the process of investigating murders includes information on forensic means and methods of detection, recording, seizure and investigation of material traces of these crimes and other material evidence used in the course of expert, investigative or judicial activities, fixed in various material sources, carriers of this information.
2. The main forms of using special knowledge in the investigation of murders include: participation of a specialist in conducting investigative (search) actions, consulting specialists and conducting forensic examinations. The integrated use of such forms will ensure the impartiality, completeness and comprehensiveness of the pre-trial investigation and will facilitate the prompt disclosure of deprivation of life.

3. Given the increased public danger of homicides, their high latency and low level of disclosure, there is an urgent need to increase the efficiency of the use of specialized knowledge in the investigation and trial of these criminal offenses. Particular attention in this activity should be paid to the use of such types of expertise as phonoscopic, soil science and handwriting, the theoretical foundations and methodological basis of which need to be updated and adjusted to the latest techniques and leading world practices. There is also a need to expand the capabilities of these forensic examinations, their comprehensive application in the investigation of this category of crimes.
4. Despite the strong scientific and technical potential for the application of specialized knowledge in the investigation of crimes against life and health, currently the level of development of relevant guidelines in Ukraine in the field of phonoscopic, soil science and handwriting, their lack of focus on today's investigative and judicial problems, practices determine the need for comprehensive research in this area, taking into account today's conditions. In addition, at the state level the priority is to develop and update a training program for novice experts, which should include a thorough study of both classical and modern methods and techniques, advanced foreign experience, which would not only expand the professional worldview of specialists with special knowledge, but and opened new opportunities for the use of certain expert studies in proving the circumstances of criminal offenses, in particular, one of the most socially dangerous - murder.

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