

INVESTIGATIVE EXPERIMENT DURING PRE-TRIAL INVESTIGATION: USING SPECIAL KNOWLEDGE AND INNOVATIVE TECHNOLOGIES TO RECONSTRUCT THE CRIME SCENE

Nehrebetskyi V. V.

INTRODUCTION

The priority tasks of criminal justice in martial law are to increase the efficiency of the process of investigating criminal offenses. In modern conditions, the European vector of development of criminology and forensic examination has necessitated the introduction of progressive institutions, the use of the most effective methods and technologies.

The issues of technologization in criminal proceedings have been addressed by the works of such legal scholars as The use of modern information technologies, including open-source information gathering, in criminal proceedings has been the focus of academic events and the works of many legal scholars as G. K. Avdeeva, V. S. Batyrgareeva, V. I. Borisov, T. Ya. Gnidgets, O. M. Borshchevskaya, S. S. Voznyuk, V. I. Grishko, Yu. I. Dmitrik, I. V. Zhukevich, I. O. Osnova, K. V. Dubonos, N. M. Dyachenko, V. A. Zhuravel, V. P. Zakharov, A. O. Ignatovich, O. Ya. Kovalchuk, R. S. Kozyakov, V. O. Konovalova, T. M. Lemekha, a.m. Lysenko, O. A. Lokhmatov, T. V. Ognevyyuk, O. S. Melnik, A. O. Moroz, I. V. Oleshko, Yu. V. Osadchaya, O. V. Plahotnik, Yu. s. Razmetaeva, O. V. Rybalsky, V. I. Rudeshko, V. I. Solovyov, L. I. Sopilnik, A. V. Stolitny, I. O. Suprun, E. A. Timoshenko, V. I. Teremetsky, V. V. Topchy, A. O. Fesenko, V. G. Khakhanovsky, L. M. Khmelnychy, R. Yu. Tsarev, V. A. Shvets, V. M. Shevchuk, V. Yu. Shepitko, and others¹.

V. M. Shevchuk believes that the successful and skillful application of innovative means of forensic technology ensures the completeness, accuracy, efficiency and effectiveness of the investigation and trial, contributes to the optimization of this activity and the fulfillment of the main tasks of criminal proceedings².

¹ *Методологічні засади криміналістики: традиції та новації* : зб. матеріалів Криміналістичних читань, присвяч. пам'яті акад. В. О. Коновалової, м. Харків, 28 берез. 2025 р. Нац. юрид. ун-т ім. Ярослава Мудрого, Каф. криміналістики; Нац. акад. прав. наук України; НДІ вивч. проблем злочинності ім. акад. В. В. Сташиса Нац. акад. прав. наук України. Харків: Право, 2025; *Трансформація завдань криміналістики в умовах воєнного стану та євроінтеграційних процесів* : зб. матеріалів наук.-практ. конф. присвяч. пам'яті д-ра юрид. наук, проф. В. О. Коновалової, м. Харків, 28 берез. 2024 р. Нац. юрид. ун-т ім. Ярослава Мудрого, Каф. криміналістики; Нац. акад. прав. наук України; НДІ вивч. проблем злочинності ім. акад. В. В. Сташиса Нац. акад. прав. наук України. Харків: Право, 2024.

² Shevchuk, V., Morozova T., Chornyi, H., Nehrebetskyi V., and Slobodeniuk, I. Artificial Intelligence in Criminal Proceedings: Criminalistic and Criminal Procedural Problems.

It should be noted that not all currently existing technologies have been the subject of research and coverage regarding the possibilities of recording results and analyzing evidence in the process of conducting individual investigative (detective) actions, therefore, the issue of researching the possibility of introducing such technologies into activities related to criminal justice requires further consideration.

In the practice of investigation, it is often necessary to verify information or an investigative version put forward on the basis of the data obtained. The group of so-called "verification" investigative actions, in particular, includes an investigative experiment³.

An investigative experiment is an investigative (detective) action that consists in recreating the actions, situation and circumstances of a certain event, conducting the necessary experiments or tests in order to verify and clarify information that is important for establishing the circumstances of a criminal offense (Article 240 of the Criminal Procedure Code of Ukraine)⁴.

Conducting an investigative experiment is possible in the following cases:

- 1) if there are doubts about the possibility of the existence of an event or fact and this is of significant importance for criminal proceedings;
- 2) when the reality of the event or fact can be ascertained by conducting experiments or tests;
- 3) when the investigator has sufficient information about the circumstances under which the event or fact occurred.

A special type of investigative experiment is the case of conducting this investigative (detective) action to determine the limits of a person's awareness or ignorance of the event of a criminal offense (the so-called "verification of testimony at the crime scene")⁵. Verification of testimony at the crime scene – is the process of comparing information obtained during interrogation and (or) ideal traces of memory with the material situation of the scene of the incident through the narration, demonstration and explanations of the person whose testimony is being verified, in order to determine his awareness of the data being verified or clarified, as well as to establish new factual data.

The purpose of this article is to determine the role of the investigative experiment as a procedural method of obtaining evidence and to outline Hans Gross's concept of applying special knowledge during this investigative (search) action, in the course of preparing for a future forensic examination, as well as to develop practical recommendations for the preparation, conduct, and documentation of the obtained results using innovative technologies.

International Annals of Criminology, 2025. Pp. 1–19. DOI: <https://doi.org/10.1017/cri.2025.10090>.

³ Комісарчук Ю. А., Ряшко О. В. Підстави та процесуальний порядок проведення слідчого експерименту. *Науковий вісник Львівського державного університету внутрішніх справ*. 2014. Вип. 3 С. 248-260.

⁴ Криміналістика: підручник / В. М. Шевчук, В. А. Журавель, В.Ю. Шепітько та ін.; за ред. В. М. Шевчука. Нац. Юрид. Ун-т ім. Ярослава Мудрого. Вінниця: Право, 2024. С.749.

⁵ Криміналістика: підручник / за ред. В. М. Шевчука. Нац. Юрид. Ун-т ім. Ярослава Мудрого. Вінниця : Право, 2024. С. 755.

1. Investigative experiment – a procedural method of verifying the evidence obtained using special knowledge

An investigative experiment is most often conducted when there are doubts and/or contradictions in the materials of the criminal proceedings and is aimed at visually reproducing the circumstances of the committed criminal offense, eliminating all contradictions, existing gaps, and obtaining new evidence (establishing the mechanism of the appearance of traces of a criminal offense, etc.)⁶. The decision to conduct an investigative experiment is made when there is a sufficient amount of factual data indicating the possible mechanism of the criminal offence. It is precisely this data that is verified during the investigative experiment.

An investigative experiment in the investigation of murders, causing bodily harm, criminal offenses related to violation of road safety rules and operation of vehicles, and in other categories of criminal proceedings acts as an investigative (detective) action focused on obtaining initial data for further forensic examination. Often, when conducting this investigative (detective) action, it is advisable for the investigator to use special knowledge, the scope of which goes beyond the investigator's competence. Although an investigative experiment is not mandatory from the point of view of the requirements of criminal procedure law, at the same time, ignoring the investigator's ability to conduct it may lead to the actual impossibility of further conducting a forensic examination. In particular, if there is no necessary information that could have been obtained through conducting an investigative experiment or it is incomplete (not detailed). Thus, the investigator's ability to use the institute of special knowledge and forensic examination directly depends on the availability of the results of the investigative experiment.

Often, an investigative experiment helps expose false testimony⁷. It represents an effective procedural method of overcoming falsehood, in particular in the case of determining the limits of a person's awareness or ignorance of the event of a criminal offense. S.F. Zdorovko emphasizes that it is not always possible to solve the task of overcoming resistance by conducting separate investigative (detective) actions⁸. Для цього потрібен комплекс цілеспрямованих і скоординованих дій, тобто проведення тактичної операції. В криміналістичній літературі пропонують використовувати цю слідчу (розшукову) дію не просто окремо, у складі тактичної операції⁹.

The suspect's participation in an investigative experiment is necessarily voluntary. Therefore, the effectiveness of such an investigative action largely

⁶ Криміналістика: підручник/ за ред. В. М. Шевчука. Вінниця : Право, 2024. С.749.

⁷ Щур Б.В. Тактика нейтралізації протидії розслідуванню злочинів, вчинених організованими злочинними групами : монографія. Х. : Харків юридичний, 2010. С. 211.

⁸ Здоровко С.Ф. Тактичні операції при розслідуванні вбивств, що вчиняються організованими групами і злочинними організаціями : автореф. дис. на здоб. наук. ступ. канд. юрид. наук: спец. : 12.00.09 «Кримінальний процес та криміналістика; судова експертиза». Х., 2002. С. 7.

⁹ Щур Б.В. Тактика нейтралізації протидії розслідуванню злочинів, вчинених організованими злочинними групами: монографія. Х.: Харків юридичний, 2010. С. 213.

depends on the position taken by the suspect and his desire to participate in this investigative (search) action.

The environment influences the person whose testimony is being verified, as they once again find themselves at the scene of the criminal event. The possibility of using such an influence is a specific feature of the psychological nature of the investigative experiment, aimed at determining the extent of a person's awareness or lack of awareness about the criminal offence. This investigative action can be regarded as a kind of "face-to-face confrontation" between the individual whose statements are being verified and the physical environment, where, on one side, there is this person, and on the other – the house, street, or other area where the events described by the suspect took place¹⁰. If the suspect has given false testimony, the investigative experiment will reveal their lack of awareness regarding the circumstances of the event and the details of the environment.

An investigative experiment must be distinguished from an experiment as a general scientific research method used as a cognitive technique during the conduct of individual procedural actions. An investigative experiment cannot be used as a substitute for conducting a forensic examination to establish factual data necessary for the investigation¹¹. Experiments within the framework of conducting an investigative experiment either do not require special knowledge at all, or require it to an extent that is accessible for perception by all its participants, while during an examination, only a forensic expert of a certain expert specialty, based on his or her special knowledge, can establish factual data that is important for the proceedings.

For example, when investigating the destruction or damage to property by arson, the advantage of using an investigative experiment is the ability to avoid the need to order a fire technical examination. This will significantly reduce the time of the investigation, and will also allow a larger number of people to confirm or refute one of the investigative versions due to the clarity, which is important for the subsequent assessment of evidence in court. A study of investigative practice has shown that in criminal proceedings of this category, investigative experiments are rarely conducted (only in 6.5% of cases)¹². At the same time, it can be used to relatively quickly obtain and consolidate in the materials of criminal proceedings factual data about the circumstances related to the occurrence and development of the fire. According to A. V. Bodnar, the spread of the practice of conducting investigative experiments in criminal proceedings on crimes related to the destruction or damage to someone else's property is one of the important reserves for increasing the effectiveness of their investigation.

¹⁰ Негребецкий В.В. Роль психологии подозреваемого под час следчого експерименту. *Підприємництво, господарство і право*. 2020. Вип. № 3. С. 307–311. URL: <https://doi.org/10.32849/2663-5313/2020.3.51>

¹¹ Криміналістика: підручник / за ред. В. М. Шевчука. Нац. Юрид. Ун-т ім. Ярослава Мудрого. Вінниця : Право, 2024. С. 755.

¹² Боднар А. В. Участь спеціаліста в проведенні слідчого експерименту під час розслідування знищення або пошкодження майна. *Науковий вісник Національної академії внутрішніх справ*. 2018. № 1 (106). С. 327–336. URL: <https://lawscience.com.ua/uk/journals/tom-23-1-2018/uchast-spyetsialista-v-provyedyenni-slidchogo-yekspyerimyentu-pid-chas-rozsliduvannya-znishchyennya-abo-poshkozhyennya-mayna#prod-reviews>

2. The role of Hans Gross' concept and special knowledge in conducting an investigative experiment

H. Gross in the book “Manuals for forensic investigators, gendarmerie and police officers” (1892) wrote: “while compiling this manual, I had an idea whether the processing of individual parts should be given to specialists: for forensic medicine – a doctor, for weapons – a weapons technician, for photographic examination – a photographer, etc. Undoubtedly, from a technical point of view, these departments would be more perfect, but this would not achieve the main goal. There are many books specifically devoted to these departments, but all of them are not adapted to the activities of the investigator, and it is unlikely that the latter will find everything he needs in them. But if it is unthinkable for the investigator to be as well-versed in special issues as the sworn experts, then, on the other hand, it is permissible to demand that the investigator knows in which cases he should resort to the help of knowledgeable persons, who exactly to choose and what to ask¹³”. The idea of the ratio of specialization of the knowledge of an investigator (detective) and a specialist was expressed by H. Gross as follows: “a forensic investigator or a lawyer cannot possess broad and deep knowledge in various fields of science and technology, but on the other hand, there is a need to master the basics of special knowledge. Thus, the specialist helps the investigator in the preparation, organization and conduct of the investigative experiment.

Let's outline the role of a specialist psychologist in an investigative experiment. A necessary condition for obtaining objective results of an investigative experiment is the ability of the investigator to interact with the participants using psychological influence, to choose its required level, direction and methods of implementation. The investigator must understand the psychology of other people, be able to diagnose their psychological features. The general rule is that the investigator must take into account the psychological characteristics of each of the participants in the investigative (search) action, depending on their status in the criminal proceedings. This principle also applies to conducting an investigative experiment. In the forensic literature, it is suggested that in certain complex cases during the investigation of serious and especially serious crimes, it is advisable to involve a qualified specialist – a specialist psychologist for the psychological support of the investigative experiment¹⁴. In this way, the investigator, on the one hand, receives the help of a specialist in assessing the behavior of the person whose testimony is being checked, and on the other hand, ensures the reliability of the received evidence. This is quite important, taking into account the prospect of the defense party's attempt in court to question the evidence obtained as a result of the investigative experiment.

¹³ Gross Hans. Criminal investigation: a practical textbook for magistrates, police officers and lawyers. Madras 1906. 889 c.

¹⁴ Курнаєва К. Г. Психологічні основи проведення слідчого експерименту. *Прикарпатський юридичний вісник*. 2021. Вип. 5(40). С. 133–137. <https://doi.org/10.32837/pyuv.v0i5.943>; Shevchuk V., Zhuravel V., Yevdokimenko S., Yevdokimenko S., Myshkov Y. Forensic Examination and Criminalistics in Investigating War Crimes: European and Ukrainian Experiences. *Jurnal Media Hukum*. 2025. Vol. 32, no. 1. P. 59–77. doi: 10.18196/jmh.v32i1.25056. URL: <https://journal.umy.ac.id/index.php/jmh/article/view/25056>

Indeed, during an investigative experiment for the purpose of verifying testimony on the spot, a person who is repeatedly at the scene of a crime is psychologically influenced by the surrounding environment¹⁵. As a result, this person may experience a certain change in mental state when perceiving the places where the evidence that exposes him is located. The need to observe the suspect's behavior when checking testimony on the spot is constantly pointed out in the psychological literature. It is, in particular, about such signs of external manifestation of the condition as confidence in choosing the direction of movement, showing objects, sudden change of direction of movement, speed, stopping, etc. The value of the observation method during the verification of evidence on the spot, as can be seen, also lies in the fact that its use allows the investigator to effectively control the behavior of the suspect, maintain an optimal mode of communication, and contributes to the selection of appropriate tactical techniques and their systems. Observation helps to diagnose the position of the suspect, to recognize whether he is hiding information that is important for the investigation. Thus, the method of observation during the conduct of this investigative action helps the investigators to identify physical evidence. Investigative practice has known cases when, in the course of checking statements on the spot with the help of surveillance, physical evidence is discovered, the location of which the suspects tried to hide from the investigation¹⁶. In our opinion, in such cases, to obtain preliminary conclusions, it is advisable to involve a specialist psychologist directly during the investigative experiment.

When investigating murders committed due to negligence, the conclusion of the forensic medical examination should include the results of studying the mechanism of injury. Therefore, when establishing a non-obvious mechanism of their occurrence, this is done by conducting an investigative experiment¹⁷. Such an investigative experiment should be documented with the help of photo, audio, graphic images, as well as a video camera, since its results can be useful for experts during a forensic psychological or complex forensic psychological and psychiatric examination, because with the help of video viewing, experts will be able to analyze the psychological behavior of the suspect, his movements and gestures, which can affect the results of the examination, in particular, to establish the presence or absence of intent, the nature and method of infliction on a given person blows, mechanism of injury or other.

The specialist's task during the investigative experiment, both at the stage of preparation and during its implementation, is also to assist the investigator in the selection of participants of the investigative experiment; development of optimal tactics for conducting an investigative experiment; selection of necessary objects, items and material evidence; creation of special conditions in which it is most expedient to carry out experimental actions; reconstruction of the environment,

¹⁵ Криміналістика: підручник / за ред. В. М. Шевчука. Нац. юрид. ун-т ім. Ярослава Мудрого. Вінниця : Право, 2024. С. 755.

¹⁶ Негребський В.В. Роль психології підозрюваного під час слідчого експерименту. *Підприємництво, господарство і право*. 2020. Вип. 3. С. 307–311.

¹⁷ Макогін І. Слідчий експеримент як пізнавальна слідча дія при розслідуванні вбивств, вчинених з необережності. *Юридичний вісник*. 2023. № 6. С. 248–254. DOI: <https://doi.org/10.32782/yuv.v6.2023.30>.

instruction and location of its participants; technically correct conduct of planned experiments; evaluation of the obtained results; advising the investigator on the best ways to verify the proposed versions; recording the results of the investigative experiment, drawing up plans and schemes based on the results of its implementation.

In particular, in the case of preparation for an investigative experiment to establish a person's special or professional skills, a specialist can assist the investigator in planning the investigative experiment, in determining tactical and technical techniques for conducting experimental actions; in the selection of experiment participants taking into account their physical data, professional and other skills, etc.; in determining actions, as well as the purpose, conditions and sequence of their implementation; in the identification and selection of tools, objects, tools, materials and other means, etc., similar to those used in the commission of a criminal offense; in the selection or manufacture of models, dummies or copies of objects used in the commission of a criminal offence; in the creation of special conditions in which appropriate experimental actions will be carried out; in the selection and verification of operational efficiency and readiness for use of appropriate scientific and technical means based on the tasks of the investigative experiment (photo and video equipment, measuring devices, etc.)¹⁸.

Conducting an investigative experiment is one of the obligatory recommended investigative (search) actions, in particular during the investigation of criminal offenses related to the violation of road safety rules and the operation of vehicles. In investigative practice regarding the investigation of violations of road traffic safety rules or the operation of transport, the following most common types of investigative experiments are found, during which the following are determined:

- distances (in order to specify them) between event participants and (or) other objects;
- trajectory of movement of vehicles or pedestrians, detection of their direction, length and shape;
- speed of movement of vehicles according to the testimony of witnesses;
- the speed of movement of pedestrians according to the testimony of witnesses or participants of the event;
- the time spent by the vehicle to overcome a trajectory of a certain shape and length;
- the moment of opening visibility to a stationary obstacle, taking into account obstacles that reduce visibility (visibility);
- the moment of opening (and distance) of mutual visibility, taking into account obstacles that reduce visibility at the bends of the road and at the breaks in its longitudinal profile;

¹⁸ Коваленко В. В. Участь спеціаліста-криміналіста у слідчому експерименті, що проводиться з метою встановлення спеціальних чи професійних навичок особи. *Криміналістика та судова експертиза*. 2014. Вип. 59. С. 148–153. URL: <https://rep.dnuvs.ukr.education/items/7812b701-3c1c-4582-a1cd-26f462452078>

- the opening moment (and distance) of the visibility of a pedestrian moving across the roadway and heading to the traffic lane from behind a stationary object on the roadway or from behind a moving vehicle;
- the mechanism of inflicting damage by means of vehicles, by their comparison (combination);
- the possibility and mechanism of inflicting bodily harm, by comparing a vehicle and a person;
- the influence of the technical condition of individual units and mechanisms on the dynamic qualities and controllability of the car;
- different operating qualities of a specific vehicle in certain road conditions.

In investigative and expert practice, there are frequent cases when an investigative experiment is conducted at the request of an expert (on his initiative, notified to the investigator during interaction), to whom the investigator plans to assign an auto technical examination¹⁹. In such a situation, the expert involved in the relevant investigative (search) action acts in the procedural status of a specialist. The investigator's use of the help of an involved expert as a specialist is considered useful during the following operations: a) determining the purpose and developing a plan for conducting an investigative experiment; b) preparation of reproduction conditions as close as possible to the real situation at all stages of a road accident; c) preparation of vehicles and/or accident participants for an investigative experiment; d) development of individual tasks of an investigative experiment; e) preparation for the application and actual application of scientific and technical means and methods for the purpose of identifying and recording circumstances that have evidentiary value; e) correct assessment of the results obtained during the investigative experiment.

When conducting an investigative experiment, the actions of the participants of the event (situation) are often reconstructed and (or) demonstrated. At the same time, if such a reconstruction is related to actions and (or) results that will be analyzed by a forensic expert in the future, it is advisable to use the help of a specialist in the relevant field during the investigative experiment. In particular, the participation of a specialist is necessary in the event that his knowledge can be used for: a) reproduction of the situation of the event; b) determination of the location of the participants of the experiment before conducting the experiments; c) compliance with the technical rules for conducting experiments; d) recording the results of the investigative experiment (Part 2 of Article 240 of the Criminal Procedure Code of Ukraine)²⁰.

Thus, special knowledge as a procedural method of obtaining evidence is of crucial importance in the content of the investigative experiment. Although the CPC does not oblige the investigator to categorically involve a specialist, failure to involve a specialist in a number of cases will lead to the impossibility of conducting a forensic examination in the future. For example, when demonstrating the method

¹⁹ Чичиркін А. О. Взаємодія слідчого з експертними підрозділами під час слідчого експерименту при розслідуванні порушення правил безпеки дорожнього руху або експлуатації транспорту. *Юридична наука*. 2020. № 3(105). С. 424–433. URL: <https://journal-nam.com.ua/index.php/journal/article/download/180/174>

²⁰ Криміналістика: підручник / за ред. В. М. Шевчука. Нац. юрид. ун-т ім. Ярослава Мудрого. Вінниця : Право, 2024. С.766.

of inflicting bodily injuries, there is a lack of necessary detailed data that could be obtained if a specialist, a forensic physician, was involved. Thus, in the court session on June 29, 2023, in the criminal proceedings on the accusation of A. in the commission of a criminal misdemeanor, provided for in Part 1 of Art. 125 of the Criminal Code of Ukraine, bodily injuries, was questioned by an expert. The expert explained that in order to provide an objective answer as to whether bodily injuries could have been caused to the victim according to the version indicated by the accused A., he needs to see the reproduction of this version, that is, to see the materials of the investigative experiment with the participation of the accused A. The investigative experiment was not conducted at the pre-trial investigation. The defender asked the court to instruct the pre-trial investigation body to conduct an investigative experiment with the participation of the accused. Therefore, the court decided to instruct the pre-trial investigation body to conduct an investigative experiment with the participation of the accused. During the investigative experiment, with the participation of the accused, establish the circumstances and mechanism of causing bodily harm to the victim, including the display of data regarding the name of the object with which the victim was injured, its weight, diameter, length, and other features of this object. To participate in the investigative experiment, involve the defender of the accused, the victim and her representative – a lawyer, as well as a specialist. The investigative experiment was documented with the help of photo recording, sound recording and video recording equipment²¹.

A specialist can draw the investigator's attention to facts relevant to the case. At the same time, the specialist can make preliminary conclusions about such data (for example, indicate approximately the time of death, the instrument of murder, the possibility of causing bodily harm in a certain way). These conclusions do not have evidentiary value and are not recorded in the protocol, but they act as indicative information and have the character of consultations. If an examination is to be appointed in the case, then the expert in the process of conducting the investigative action can provide the investigator with consulting and technical assistance, and his actions will be covered by the status of a specialist. In the case of an investigative experiment to determine the fact of a person's awareness or ignorance of the event of a criminal offense, the specialist's role may also consist in asking questions of the person whose testimony is being checked, in order to clarify certain circumstances that are important in the case. He can assist the investigator in recording the results of forensic reconstruction, which is carried out by the person whose testimony is being checked.

We believe that during the reconstruction of the event situation (in particular, during the investigation of murders, personal injuries, criminal offenses related to the violation of road safety rules and the operation of vehicles), it is appropriate to involve a specialist in this investigative (search) action. The specialist provides assistance to the investigator in identifying, securing and extracting evidence, using his special knowledge. A specialist can draw the investigator's attention to facts

²¹ Ухвала Веселинівського районного суду Миколаївської області від 29.06.2023 по справі 472/608/22. URL: <https://opendatabot.ua/court/111856458-c294cae88c77910b65a7cfbd79503746/>

relevant to the case. In particular, this is provided for in Article 71 of the Criminal Procedure Code of Ukraine. The data established in this way can be subjected to subsequent expert or experimental verification. At the same time, the specialist can make preliminary conclusions about such data (for example, indicate approximately the time of death, the instrument of murder, the possibility of causing bodily harm in a certain way). His conclusions do not have evidentiary value, but they act as guiding information and have the character of consultations. If an examination is to be appointed in the case, then the expert in the process of conducting the investigative action can provide the investigator with consulting and technical assistance, and his actions will be covered by the status of a specialist.

The role of a specialist during an investigative experiment to determine the limits of a person's awareness or ignorance of the event of a criminal offense can be illustrated by the following example. The corpse of citizen P. was found in the forest with three bullet wounds in the body. The suspect in the murder was citizen S., who, during the interrogation, confessed to committing this crime and stated that the murder occurred as a result of self-defense. When checking the testimony at the scene, the suspect clarified the mechanism of inflicting gunshot wounds on the victim. A forensic medical expert was present during the investigative experiment. After listening to S.'s explanation, the latter came to the conclusion that the suspect's version of self-defense does not correspond to the recreated mechanism of inflicting bodily injuries on the victim. Later, the specialist's conclusion was confirmed by the results of a forensic medical examination²².

The role of a specialist during an investigative experiment may also consist in asking questions of the person whose testimony is being checked, in order to clarify certain circumstances that are important in the case. He can provide assistance to the investigator in recording the results of forensic reconstruction, which is carried out by the person whose testimony is being checked. Let's illustrate this with the following example.

Citizen R was suspected of the intentional murder of citizen S. During the interrogation, he confessed to committing these crimes and said that immediately after the attack, he began to hit the victim hard with a stick on her body and head, after which he pulled a handkerchief around her neck and strangled her. During the investigative experiment with the participation of R., a forensic medical expert was present. The specialist suggested that the suspect use a mannequin to reproduce the relative position of R. and the victim, as well as the mechanism of hitting her with a hook on the head. Then the expert gave the suspect a handkerchief and asked him to demonstrate how the knot was tied on the victim's neck. The suspect recreated the knot on the mannequin, after which the specialist cut the handkerchief as it was done earlier in the course of the forensic examination of the corpse. Forensic examination showed that this knot and the knot removed during the forensic examination of the corpse were tied in the same way²³.

²² Nehrebetskyi V. Tactical and psychological bases of neutralization of counteraction to the investigation of a criminal offense during an investigative experiment. *Entrepreneurship, economy and law*. 2022. № 1. pp. 96–100.

²³ Ibid.

3. The importance of forensic reconstruction and innovative 3D modeling technologies during an investigative experiment

As H. Gross wrote: “Criminal science, by its nature, begins only where criminal law, also by its nature, stops its work: substantive criminal law has as its subject the study of the criminal act and punishment, formal criminal law (process) contains the rules of application of substantive criminal law. But in what way are crimes committed? How to investigate these methods and reveal them, what were the motives for committing such a thing, what goals were in mind – neither the criminal law nor the process tell us about all this. This is the subject of criminology and its special part: forensic psychology”²⁴.

The process of conducting an investigative experiment and the results obtained at the same time must be properly and methodically correctly procedurally recorded so that they can take a place among other evidence in the case. The latter determines the need to choose scientifically based and practice-tested methods and techniques for recording this investigative (search) action.

Information with a complex structure, which in particular can characterize the spatial arrangement of objects and have a dynamic nature, is subject to fixation. For example, the situation on the spot, the sequence of individual actions, the route of movement, the behavior of the person whose testimony is checked, in particular, his initiative in demonstrating actions, directions of movement, the location of individual objects, the reproduction of the original situation. This explains the expediency of using additional methods of fixation, focused on space and (or) the dynamics (sequence) of the event.

During this investigative (search) action, along with the protocol, it is advisable to use additional methods of recording: photography, sound and video recording, drawing up plans and schemes, making graphic images, prints and casts, which are attached to the protocol (Part 2 of Article 240 of the Criminal Procedure Code of Ukraine). The main criterion in choosing the latter is their ability to visually illustrate the information received. In this context, video recording and creation of 3D models are quite informative.

I would like to draw your attention to the fact that there are peculiarities in the application of methods, methods and methods of documenting the results during an investigative experiment. This is related to the specificity of the process of cognition during the investigative (search) action and the structure of the received information. Thus, during an investigative experiment to determine the limits of a person's awareness or ignorance of the event of a criminal offense, the person whose testimony is being checked actually creates a forensic model of the event (reconstructs the event) in the presence of the investigator. It is essential that this model is built on the basis of testable indications. And the model itself acts as a tool for verification of testimony. The advantage of this method of checking readings is the clarity and illustrativeness of the model. The investigator perceives the real place, objects, traces, as well as explanations and actions of the suspect whose testimony is

²⁴ Gross Hans. Criminal investigation: a practical textbook for magistrates, police officers and lawyers. Madras 1906. 889 c. URL: https://openlibrary.org/books/OL7234663M/Criminal_investigation.

verified at the crime scene. At the same time, the imaginary model of the event built in the mind of the investigator is supplemented with perceived images of the real situation, as well as explanations and actions of this person.

At the same time, the investigator checks the actual data contained in this model for consistency with the existing situation at the scene. He makes sure of the existence of the place itself, objects and landmarks, becomes an eyewitness to the actions demonstrated by the suspect whose testimony is being checked. Therefore, an indispensable condition for the effectiveness and reliability of the results of such a check is the research and recording of the actual situation at the scene of the event to confirm the correctness of the testimony being checked, otherwise it is devoid of any meaning. Studying the location of the place, objects and landmarks indicated by the person whose testimony is being checked is included in the content of the comparison method. The comparison method is the main one during the investigative experiment with the aim of verifying the testimony of the suspect at the scene of the crime.

An investigative experiment to determine the fact of a person's awareness or ignorance of the event of a criminal offense is based on the use of a specific method of obtaining information that allows identifying and establishing data that are not available to other procedural forms of obtaining evidence. Such a method is a comparison of the suspect's testimony about the circumstances of the crime related to a certain place with the actual situation at that place. The situation is demonstrated to the investigator by the person whose testimony is checked at the scene of the crime. This method is a variant of the comparison method. The latter is the basis for verification investigative (search) actions.

The comparison during the investigative experiment cannot be reduced to a simple comparison of the suspect's oral messages with the actual situation at the crime scene. The comparison method consists in the simultaneous comparative study and assessment of properties or features common to two or more objects. Comparing and correlating different information systems makes it possible to single out new information that does not exist in nature in isolation²⁵. In the procedural legal literature, it is noted that this investigative action is specially carried out to compare factual data – the testimony of the suspect, which he gave during the interrogation, with the actual situation, testimony and actions of this person on the spot, as well as the results of the inspection of the scene and the interrogation of witnesses and the victim. Comparison of information from the specified sources is a specific feature of the investigative experiment to determine the limits of awareness or ignorance of a person about the event of a criminal offense. In his absence, the investigative action turns into an ordinary interrogation or inspection of the crime scene.

The comparison process consists of three interdependent elements – narration, display and review. The suspect tells about the events that took place at the given place and the circumstances closely related to them. In order to clarify, she may be asked questions by the investigator and, with his permission, by other participants in the investigation. However, the content of the questions should not go beyond

²⁵ Nehrebtzkyi V. Tactical and psychological bases of neutralization of counteraction to the investigation of a criminal offense during an investigative experiment. *Entrepreneurship, economy and law*. 2022. № 1. pp. 96–100.

the circumstances, the investigation of which is connected with the place of the event. The person's story at the scene is accompanied by the demonstration of individual actions and poses that are not of an experimental nature, as well as the display of individual objects and landmarks that are part of the general complex of the given situation. A story that is not accompanied by such a demonstration, a reproduction of past actions, turns into an ordinary interrogation and loses any signs of an investigative experiment.

An indispensable condition for the effectiveness and reliability of the results of the investigative experiment to establish the fact of the person's awareness of the situation and circumstances of the event is the study and recording of the situation at the scene of the event. This is necessary to confirm the correctness of the testimony and determine the degree of awareness or ignorance of the person. We believe that studying the location of the place, objects and landmarks indicated by the suspect, whose testimony is being checked, is included in the content of the comparison method. This is the interdependence of the elements of the comparison of testimony with the actual situation, when the process of telling, showing and examining by themselves lose the meaning of independent investigative actions and in their totality form a new independent investigative action. Such a combination of elements is not mechanical; elements of other investigative actions appear in a transformed form, they are organically connected with each other. Quantitative advantage of the elements of one action over the elements of another, changing the ratio between them does not change the quality of the investigative action itself.

But it is important to take into account the complexity of the cognitive nature of an investigative experiment – it is an investigative (exploratory) action designed to verify already collected evidence. If new material evidence (things, documents, a corpse, parts of a corpse, etc.) is discovered during the investigative experiment, then the investigative experiment must be stopped (or suspended, if there is a need to continue it in the future). In this case, another investigative (search) activity should be carried out – an investigative inspection of the scene during which during which it is necessary to examine and remove material evidence discovered during the investigative experiment²⁶.

It is obvious that the use of such a rather complex method of data verification (matching method), the result of which is the formation of a forensic model of the event, requires the use of appropriate methods of fixation. So, if during an investigative experiment, the location of the event participants is reconstructed at a certain point in time, then it is quite difficult, and sometimes impossible, to describe such results in words in the protocol. In this case, it is easier to make a diagram, plan or take a photo. The advantage of this method of action is to simplify the subsequent evaluation of the results of the investigative action. After all, in comparison with the protocol, the photo table has an obvious plus in forming an idea of the spatial location of the participants of the event.

In forensic literature, attention is drawn to the expediency of using a graphic method of documenting the results of an investigative experiment²⁷. We will cite

²⁶ Криміналістика: підручник/ за ред. В. М. Шевчука. Вінниця : Право, 2024. С. 774.

²⁷ Там само. С. 771.

cases when it is necessary to use graphic models (plan, scheme, photography, video recording) as ways of documenting evidentiary information during an investigative experiment:

1. The suspect indicates the details of the situation, the knowledge of which indicates his guilty knowledge of the circumstances of the event under investigation.

2. Several suspects during separately conducted investigative experiments indicate the same details of the situation, and this also indicates their guilty knowledge. Such objects in the area act as landmarks, as they allow to recognize a fragment of the area, to compare the testimony of several accomplices.

3. The suspect indicates the details of the situation that were not preserved at the time of this investigative action. For example, the place where the stolen things were.

4. During the examination of the testimony, traces causally related to the crime event were found on the spot, for example, things that belonged to the rape victim.

During an investigative experiment, there may be a need to document information of a dynamic nature. For example, the process and results of experiments, the sequence of individual actions performed by a person, the route of movement, the behavior of the suspect, in particular, his initiative and independence (lack of prompts) in demonstrating actions, directions of movement, location of individual objects, reconstruction of the original situation. In such cases, it is advisable to use a video recording. In practice, most often, in parallel with the video recording, photography of the course and results of the investigative experiment is carried out. Proposals regarding the expediency of parallel use of photography and video recording are expressed in the literature as well²⁸. However, in this case, the participation of an additional forensic specialist is required, since it is not realistic for one person to take photos and record videos at the same time.

In investigative practice, the results of an investigative experiment are often used as materials during forensic examinations. Thus, an investigative experiment is often conducted following a criminal proceeding about a vehicle hitting a pedestrian in order to establish the possibility of a timely assessment of the road situation by the driver. In this case, the reconstruction of the accident situation is carried out, various variants of the situation are simulated. The results of the investigative experiment will serve as forensic examination materials in the future²⁹. In such cases, documenting the obtained results through the creation of graphic models of the scene of the event and the actions of its participants will help the expert to complete the tasks in the future.

By the decision of the Amur-Nyzhnyodniprovskiy District Court of Dnipropetrovsk dated 27.12.2019 in case No. 199/7160/19, the motion of the defense attorney was granted. The defense attorney requested to instruct the investigator to conduct a repeated investigative experiment in criminal proceedings under Part 2 of Article 286 of the Criminal Code of Ukraine, in order to reconstruct the mechanism

²⁸ Коваленко В. В. Участь спеціаліста-криміналіста у слідчому експерименті, що проводиться з метою встановлення спеціальних чи професійних навичок особи. *Криміналістика і судовая експертиза*. 2014. Вип.59. С. 148–153. URL: <https://rep.dnuvs.ukr.edu/items/7812b701-3c1c-4582-a1cd-26f462452078>

²⁹ Тактика проведення слідчого експерименту під час досудового розслідування: метод. рек. / П. Є. Антонюк, А. О. Антошук, В. В. П'яковський, А. В. Самодін. Київ : Нац. акад. внутр. справ, 2021. С. 35.

of the collision of the car "Mitsubishi outlander 3.0" with the motorcycle "Yamaha". The court involved a forensic expert to participate in the repeated investigative experiment to provide methodological assistance in conducting this investigative action³⁰.

The use of 3D modeling to reconstruct the events of a crime is one of the most promising directions in criminalistics. In the scientific literature, reconstruction is considered as a way of building 3D models that are used to investigate a criminal offense. And the 3D model itself is considered as a reconstructed object that is subject to research. A 3D model is created as a result of the application of reconstruction by digitally reproducing the characteristics of the object. You can reconstruct, for example, its shape, dimensions, weight, lighting, environment, visibility, etc. As a result of the reconstruction, a 3D model is created, which virtually reproduces the object and (or) event. So the model is important for the investigation of a criminal offense, further the model is examined to establish or not the existence of relevant facts and assumptions.

Today, in order to record the results of an investigative experiment, the use of scientific and technical means that allow creating digital graphic 3D models of the objects under investigation is relevant³¹. It is noteworthy that the domestic practice of using 3D modeling in the investigation of criminal offenses began precisely with traffic accidents. Thus, the analysis of the practice of investigation of criminal cases based on the facts of criminal violation of traffic safety and operation of transport carried out by the Kharkiv Research Expert-Forensic Center of the Ministry of Internal Affairs of Ukraine in 2011 showed that the inspection protocols of road traffic accidents (hereinafter referred to as road accidents) do not always fully reflect: the circumstances of the event, road conditions, the nature of technical damage to vehicles, traces on the road surface, etc.³² Based on the experience of the practical work of auto technician experts, the problem of low-quality reflection of information from the scene of the accident in the inspection protocols of the scene remained problematic at that time.

From this situation, the experts-auto technicians of the Kharkiv Research Expert-Forensic Center of the Ministry of Internal Affairs of Ukraine studied the possibility of using modern laser scanning systems for the needs of investigative units and the expert service of the Ministry of Internal Affairs of Ukraine. From a number of such devices, attention is drawn to the main manufacturers (firms): "Leica Geosystems"

³⁰ Ухвала Амур-Нижньодніпровського районного суду м.Дніпропетровська від 27.12.2019 по справі № 199/7160/19. URL: <https://zakononline.com.ua/court-decisions/show/86677346>.

³¹ Шехавцов Р.М. Впровадження технологій 3D моделювання у розслідуванні злочинів: правові та криміналістичні проблеми. *Криміналістика XXI сторіччя* : матер. Міжнар. наук.-практ. конф. 25–26 листопада 2010 р. Харків : Право, 2010. С. 166.

³² Системи лазерного сканування. документування обставин дорожньо-транспортних пригод: Інформаційний лист / Перлін С.І., Шевцов С.О., Кучерявенко О.Б., Бурак С.А. Науково-дослідний експертно-криміналістичний центр при ГУМВС України в Харківській області, 2011. 48 с.

(Switzerland); “Zoller+Froehlich GmbH” (Germany); “Riegl” (Austria); “FARO” (USA)³³.

At the scene of a road accident, a complex of “trace information” may have evidentiary value, which should include: the situation at the scene of the accident, the location of the corpse, the location of the vehicle, tracks on the road surface from the wheels of the vehicle, traces of glass and soil debris, etc.). Fixation of such objects and traces (actual data) is carried out by entering them into the inspection of the scene of the road event protocol, as well as by photographing them. The use of methods and various techniques of forensic photography in documenting the circumstances of road accidents remained the main method of recording for auto technician specialists in post-Soviet countries. At the same time, there are a number of photogrammetric programs (“PC-Rect”, “Photo Modeler Pro 5”, “Iwitness”) that offer a higher-tech way of recording the situation at the scene of a traffic incident³⁴. The listed photogrammetric programs allow you to convert photos of the scene of a traffic incident into a plan (top view), and then into a large-scale “diagram” (graphic drawing).

There are graphic programs for making only a large-scale diagram at the scene of a traffic accident. In this regard, the complex of software under the general name “Sad Zone” definitely deserves attention. “Sad Zone” is a package of programs developed in the USA for police officers, which includes: “Fire Zone”, “Crime Zone”, “Crash Zone”, “Quick Scen” and others. The first programs for creating a graphic image for the US police began to be put into practice since 1990.

The “Crash Zone” program is intended directly for use by police officers documenting traffic incidents. The software allows you to specify the mechanism of the event in critical situations, in real time. A laptop computer and a portable printer can be used if necessary. When a mistake is made in the scheme, when creating it manually, it is necessary to make corrections, to correct erroneously entered data, which immediately attracts attention and casts doubt on the accuracy and objectivity of the document.

Police departments in the USA and Canada have also long and successfully used such a program for recording the circumstances of the event as “Quick Scene”³⁵. The specified police car software allows you to create a schematic image of the situation at the scene.

Laser scanning is widely used when recording the situation at the scene of all types of crimes (including when documenting a traffic incident). The joint use of laser scanners and high-frequency digital cameras is especially relevant, which allows you to “color” scanned images in real color and obtain orthophoto illustrations for detailed and accurate measurements.

³³ Leica Geosystems URL: <http://www.leica-geosystems.com/hds>; Zoller+Froehlich GmbH. URL: <http://www.zf-laser.com>; Riegl . URL: <https://riegl.kz/produksija.html>; Faro. URL: <http://www.faro.com/focus>.

³⁴ PC-Rect 4.0 URL: <https://pc-rect.software.informer.com/4.0/>; Applications of Photogrammetry and PhotoModeler URL: <https://www.photomodeler.com/>; iWitnessPRO V4. URL: <https://www.photometrix.com.au/iwitnesspro-v4/>

³⁵ Соколов О.В. Аналіз програмного забезпечення по дослідженню ДТП. С. 440–442. URL: <https://api.dspace.khadi.kharkov.ua/server/api/core/bitstreams/8e0bc032-269b-471f-a39f-a03e3c985cf3/content>

Laser scanning should be considered a revolutionary technology not only for the needs of investigation and analysis of a traffic incident, but also for many branches of forensics. It allows you to increase the informativeness of the data available at the scene by several times, provides clear and convenient visualization in three-dimensional form, allows you to achieve high illustrative quality, similar to photo and video images, and also provides the opportunity to measure the entire cloud of points. Laser scanning provides a photographic image of the terrain, but presented in three-dimensional form with the ability to freely change the perspective. Thanks to this, in the subsequent stages of the investigation and during the “reproduction” phase, it is possible to re-display the “traffic incident scene” as it was at the time of the scan. By means of laser scanning, it is possible to obtain the required number of scan images of the “scene of a traffic incident” to combine them into a finished image of the scene of the incident. These data can be stored on external digital media in a format convenient for further use.

Laser scanning data allows you to perform the necessary additional measurements of important elements of the “scene of a traffic incident” at any moment without undue difficulty. This opportunity will certainly be used by automotive experts during transport and road studies and analysis of the circumstances of a traffic incident. Thus, the presence of a three-dimensional image of the situation at the scene of a traffic incident allows you to simulate the nature of the convergence of vehicles before a collision and to specify their location at specific moments in time.

CONCLUSIONS

The investigative experiment constitutes a procedural method for verifying a suspect’s testimony and other evidence, and it involves the active use of special knowledge. A specialist may provide substantial assistance in examining and documenting the information obtained during the investigative experiment. The complex nature of the evidentiary information gathered by the investigator during this investigative action necessitates the use of documentation methods suitable for creating graphic models of the examined objects (such as plans, diagrams, photography, video recording, and 3D modeling). This simplifies the subsequent assessment of the results of the investigative (search) action and provides broader opportunities for using the obtained information within criminal proceedings.

The use of a laser 3D scanner for documenting the results of an investigative experiment is highly advisable. The creation of a 3D model is particularly effective when conducting an investigative experiment that requires documenting the environment, the location of objects, movement trajectories, the position of bodies, and similar elements.

SUMMARY

The article is devoted to examining the potential of the investigative experiment as an investigative (search) action aimed at obtaining initial data for a subsequent forensic examination. Although an investigative experiment is not mandatory under the requirements of criminal procedural law, ignoring the possibility of conducting it may, in practice, make it impossible to carry out a forensic examination at a later stage – particularly when essential information that could have been obtained through

the investigative experiment is either missing or incomplete (insufficiently detailed). Thus, the investigator's ability to employ the institution of special knowledge and forensic expertise directly depends on the availability of the results of the investigative experiment.

During an investigative experiment, the actions of participants in the event (and/or the environment itself) are often reconstructed or demonstrated. If such reconstruction is connected with actions and/or outcomes that will later be analyzed by a forensic expert, it is advisable to involve a specialist in the corresponding field during the investigative experiment. Therefore, special knowledge as a procedural means of obtaining evidence plays a decisive role in shaping the content of the investigative experiment. Although the Criminal Procedure Code does not strictly require the investigator to involve a specialist, failure to do so in certain cases may make it impossible to conduct a proper forensic examination later.

The article examines the specifics of using methods of documenting the content and results of this investigative (search) action and analyzes the experience of employing modern technologies at different stages of its execution. The primary criterion for selecting such technologies is their ability to visually illustrate the information obtained. In addition to the written protocol, it is advisable to use graphic methods of documentation. Emphasis is placed on the possibilities of using scientific and technical tools capable of generating digital 3D graphic models (3D modeling systems) for the purpose of documenting and subsequently visualizing the collected data, as well as presenting them during court proceedings.

Key words: investigative experiment, criminal justice, Hans Gross, special knowledge, technologization, innovations, 3D modeling, laser scanning.

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Information about the author:

Nehrebetskyi Vladyslav Valerevych,

Ph. D. in Law,

Associate Professor at the Department of Criminalistics

Yaroslav Mudryi National Law University

77, Hryhoriia Skovorody str., Kharkiv, 61024, Ukraine,

Researcher at Academician Shashis Scientific Research Institute

for the Study of Crime Problems

National Academy of Law Sciences of Ukraine

49, Hryhoriia Skovorody str., Kharkiv, 61002, Ukraine