UDC 348.98

CRIMINALISTIC TECHNIQUE:INNOVATIVE DIRECTIONS OF MODERN CRIMINALISTIC RESEARCH

Shevchuk V. M.,
Doctor of Legal Sciences, Professor,
Professor of Criminalistics of the
Yaroslav the Wise National Law University,
Honored Lawyer of Ukraine,
ORCID: http://orcid.org / 0000-0001-8058-3071

Summary. The article is devoted to the researchers of current problems of innovations in criminalistic technique. The main innovative areas of use of criminalistic technique in law enforcement activities, which ensure its efficiency and effectiveness, are identified. It is noted that one of the most important tasks of further development of criminalistics is to improve the structure of criminalistic technique in view of the emergence, development and current state of certain innovative areas of this branch of criminalistics. It is substantiated that as a promising innovative direction it is necessary to significantly intensify the work on the use of artificial intelligence to ensure the solution of practical problems in the fight against crime, including counteracting the spread of the coronavirus epidemic.

Key words: criminalistic technique, criminalistic innovation, innovation criminalistic product, innovations in criminalistic technique, innovative directions.

Introduction. The current realities of the 21st century have been marked by the fact that the world community has faced one of the most dangerous threats of recent times ─ the Covid-19 coronavirus epidemic. In March 2020, the World Health Organization declared a pandemic due to an outbreak of coronavirus infection, calling the spread of coronavirus a «global emergency». As a result, the Covid-19 coronavirus epidemic and her aftermath have significantly affected the world economy, human consciousness and behavior, that in turn has changed criminal activity, law enforcement, national security of countries in sphere of health, and

caused the appearance new tasks and functions criminalistics in today's conditions. In the context of a pandemic, modern crime has recently changed somewhat, it has acquired new features, trends and characteristics. Practice shows that in such conditions street crime has significantly decreased, while has sharply increased the number of crimes committed by organized criminal groups related to the use of Internet technologies. Fraud perpetrated by organized criminal groups, characterized by «criminal specialization» and a clear division of functions and often an international level of connections, and has become widespread. Such negative trends in the dynamics and structure of crime have posed new tasks and functions to criminalistics, which are related to the «social order» of practice to find adequate means, receptions and methods to combat modern challenges of crime.

As can be seen, in modern realities, one of the most promising areas in the fight against crime is the development, implementation and application of criminalistic innovations in law enforcement in order to increase its efficiency, effectiveness and optimization. Therefore, the creation and introduction of innovative criminalistic products, their active practical use, today is considered a priority task of criminalistics at the present stage and the urgent need for law enforcement practice.

Traditionally, in criminalistics there are three areas of identifying the development and implementation of innovations ─ technical-criminalistic, tactical-criminalistic and the direction of providing methods for investigating certain types of crimes [1, p. 50]. In our opinion, the technical-criminalistic direction has received the most active development in terms of innovation, but in the researches of this issue there are now many debatable and unresolved issues that need special study and resolution.

Results and discussion. As we can see, the study and analysis of criminalistic sources, criminalistic practice makes it possible to identify a number of significant problems in the use of means and methods of forensic techniques by practitioners, which is in most cases a consequence of insufficient criminalistic support of such activities which is often associated with low level of training of relevant specialists, in many cases they lack the necessary knowledge, skills and practical abilities to

work with the latest scientific and technical means, methods, innovative technologies in the detection, investigation and prevention of modern criminal acts. In this regard, rightly noted A.V. Ishchenko, that in this case it is necessary to increase the role of the practical direction of criminalistics, the implementation of its practical and applied function and may be associated with the creation of appropriate scientific and methodological support use of means and methods of criminalistic techniques, organization of their implementation in practice [2, p.102].

Today, criminalistic technique, harmoniously combining the achievements of natural, technical, humanities, is considered by most criminalistic scientists (V.P. Bakhin, R.S. Belkin, V.G. Goncharenko, V.Y. Karlov, N.I. Klymenko, M.V. Saltevsky, V.Yu. Shepitko, etc.) as a section of criminalistics, which is a system of scientific knowledge, as well as developed on their basis technical means, technique and methods designed to collect, research and use the use of criminalistical significant information in order to establish truths in litigation.

It is known that the emergence of criminalistic technique as a system of criminalistic knowledge and a variety of practical activities is associated with the introduction of the achievements of natural and technical sciences in the practice of combating crime [3, p.7] Criminalistic technique were formed on the basis of the use of data from the natural and technical sciences in criminal proceedings in order to detect and investigate crimes. Methods of chemistry, physics, ballistics, medicine and other fields of knowledge were adapted to identify traces of crime, their study and interpretation, and ultimately ─ to solve the problems of criminal proceedings. Along with this, and developed their own criminalistic technique and means. Thus, in the field of criminalistics there is a coherent system of scientific and technical means, adapted and specially designed for the detection, investigation and prevention of crimes [4, p. 21-30]. The purpose of the use of criminalistic technique is to identify and study the reflections (traces) of a criminal event and extract evidence from them [5, p. 121].

In the modern realities in the field of criminalistic technique there is a tendency of active search for the development and implementation of innovative criminalistic

products aimed at optimizing the investigation of crimes and trials. As noted in the criminalistic literature, such innovative products include new developed or adapted to the needs of investigative (judicial) practice criminalistic means, modern information technology, electronic knowledge bases, methods of recording, analysis and evaluation of evidence, and others. Examples of innovations in law enforcement are identification biometric systems based on static and dynamic human characteristics (electronic human identification systems based on biometric characteristics ─ fingerprints, appearance, appearance of the iris, DNA, gait, handwriting, etc.), automated workplaces (in particular, the workstation of the investigator "Insight"), automated information retrieval systems and databases ("Investigative Practice", "Investigative Precedent", etc.), etc. [6, p. 40].

Among the innovative methods and tools, according to V.D. Bernaz, importance is given to *biometrics*,that is those that allow you to measure the physical and behavioral characteristics of a person in order to identify him or solve diagnostic problems. Original attempts to find new ways to solve the problems of personal identification are the use of means, in particular: identification of a person by his external signs through video systems, using thermal imaging equipment; by voice, by articulation during the pronunciation of individual sounds, words. The capabilities of the polygraph are also underutilized in determining the suitability for investigative and detective activities and the presence of professional deformity; in the diagnosis of the veracity of evidence; in revealing involvement in a crime, etc. Since 1985, the practice of combating crime has been implemented as a genomic method of identifying a person by his DNA, which is one of the most significant achievements of criminalistics of the twentieth century and may completely replace dactyloscopy in future criminalistic registration and personal identification. [7, p. 188].

In this regard, the use of *nanotechnology for criminalistic purposes*, in particular, the development of innovative methods and technologies that expand the possibilities of human identification in genotypic examination are of scientific and practical interest. The development of a biochip, which allows to establish the identity of the subject on a tiny trace of DNA with a probability of 99.6%, allows

today to identify individuals when detecting at the scene, say, crumpled napkin or cigarette butt with a small amount of saliva, which was impossible before. [8, p. 121].

In the field of criminalistic technique, the search for new biometric methods for use in investigative and judicial activities continues, in particular, the identification of a person by *a pattern of the bottom or iris of eye*. Thus, according to research and data from American scientists, human fingerprints have 40 unique characteristics, while the iris - 256. That is why scanning the retina of the human eye is quite actively used by the banking security system to identify a person [1, p. 51]. To solve the problem of identification, a *method of scanning the so-called venous map* is used, that is infrared reading of the image of the veins of the hand. The widespread use of computer technology has led to the increasing use of criminals to commit crimes. As a result, it was possible to identify the person by keyboards handwriting. [9, c. 267-279].

Moreover, the development of criminalistic technique involves the *development of information-reference systems such as Automated Workplaces (AWP).* Examples of such AWP`s are: AWP of the investigator "Insight", AWP of forensic experts of various expert specialties (trasologist, ballist, economist, phonoscopist, polygrapholog examiner, etc.). Therefore, criminalistic technique today is developing in the direction of introducing innovative information, digital and telecommunications technologies in law enforcement activities. This development is also associated with the improvement and creation of criminalistic means for the study of sound, electronic traces, human DNA; adaptation of the latest technics for technical-crminalistic support of tactics of investigative (search) actions and unspoken investigative (search) actions.

In this context, relevant in the field of criminalistic technique are *research and retrieval of ideal traces in human memory with the help of technical-criminalistic means.* Innovative means and technologies are: the use of computer polygraph, "PhotoRobot", digital photography, audio and video recording, spectrograph, unmanned aerial vehicles, surveillance and video surveillance systems, etc. So, in our opinion, the statements of some scientists and practitioners that research in the field

of using technical means such as a polygraph to diagnose the information state of the individual is quite reasonable [10, p. 338].

Recently, along with traditional means of detection, fixation, retrieval, as well as the study of material traces and the situation in general, an innovative and very promising area is the active use of *modern three-dimensional digital technologies and artificial intelligence*, which aims to create visualization and reconstruction of circumstances and pictures of the crime or its individual episodes (details) using 3D models. Practice shows that law enforcement officers are increasingly faced with the need to study and record material objects located in large areas ─ the consequences of criminal explosions, fires, accidents and catastrophes on various modes of transport, man-made disasters. For the reconstruction of the scene, the method of laser scanning of certain objects and their reproduction in the form of 3D-visualization systems is becoming more widespread, which allows to capture and reconstruct in millimeter details the scene and its individual objects in three-dimensional space, which is not possible when using conventional means and methods of research of these objects. This makes it possible to investigate and use important criminalistic information during the investigation of criminal offenses and subsequently in the trial of criminal proceedings. The use of laser scanning of terrain and objects, which results in a 3D model, allows to increase several times the informativeness of the data collected at the scene, provides a clear and convenient visualization in three dimensions, which allows to achieve high illustrative quality [11, p. 159].

Among the promising areas that have important criminalistic significance in the investigation of crimes, we can highlight the *use of technology "BIG DATA"*. In practice, this method is used during investigative (search) actions and unspoken investigative (search) actions, in the methodology of investigation of certain types of crimes, including criminalistic technique. At the same time, the technologies of network analysis, tactical profiling, pattern analysis allow to successfully detect and investigate crimes [12, p. 74-78].

Promising areas for the *use of innovative technologies in combating the spread of Covid-19 coronavirus infection* are the following: 1) using of unmanned aerial

vehicles; 2) application of surveillance and video surveillance systems; 3) using of electronic control over the movement of persons in space and air; 4) development and application of identification systems for facial recognition; 5) using of "BIG DATA" technologies; 6) introduction of various applications, services and platforms used in the fight against the spread of coronavirus; 7) using of a system for detecting people with increased temperature, which can be installed at the entrance to the building; 8) using of automated systems to identify potential patients and prevent the spread of coronavirus, etc. Thus, the prospects for the development of this branch are associated with the creation of new such means, innovative technologies, as well as taking into account foreign experience (China, South Korea, USA, etc.). Therefore, the work on the use of artificial intelligence to ensure the solution of practical problems in the fight against crime, including combating the spread of the coronavirus epidemic, should be significantly intensified.

In our opinion, a promising area in criminalistics is the use of innovative means and technologies of criminalistic technique in various areas of law enforcement, expanding the application of criminalistic knowledge in various types of legal practice, which in today's reality is quite relevant and requires further research. We are talking about the possibility of using criminalistic technique in court proceedings, in criminal and civil proceedings, administrative proceedings, in the prosecutor's office, advocacy and notarial activities [13, p. 43] etc. In our opinion, this shows a manifestation of another important trend in the development of modern criminalistics ─ the expansion of the application of criminalistic knowledge from the sphere of combating crime to law enforcement and other activities [14, p. 905].

Conclusions. The purpose of the use of criminalistic technique is to identify and study the reflections (traces) of a criminal event and extract evidence from them. Therefore, the successful and skillful use of innovative means of criminalistic technique ensures the completeness, accuracy, efficiency and effectiveness of the investigation and trial, contributes to the optimization of these activities and the solution of the main tasks of criminal proceedings. One of the most important tasks of further development of criminalistics is to improve the structure of criminalistic

technique in view of the emergence, development and current state of certain innovative areas of this branch of criminalistics [15]. As practice shows, a promising area of research in modern criminalistics is the study of non-traditional branches of criminalistic technique (criminalistic odorology, phonoscopy, polygraphology, etc.). To a large extent, they determine the innovative directions of modern criminalistic research in the field of criminalistic technique. Of particular importance are the possibilities of using criminalistic technique in today's global threats, informational influences and the situation of the epidemiological crisis associated with the coronavirus pandemic.

REFERENCES

1. Bernaz, P. V. (2015). Innovations are the basis for criminal maintenance activities for the investigation of crimes. *South Ukrainian Law Journal*, 4, 49-53.

2. Ishchenko, A.V. (2003). *Methodological problems of criminalistics scientific research: monograph; edited by Krasyuk, I. P.* (p.359). Kyiv: National Academy of Internal Affairs.

3. *Criminalistics: textbook: in 2 volumes.* (2019). Volume 1 (p.465). [compiled by: Shepitko, V.Yu.(editor.), Konovalova, V. O., Zhuravel, V. A., Shevchuk, V. M. and others.] Kharkiv: Pravo.

4. Saltevsky, M. V. (1999). *Criminalistics: tutorial: in 2 parts*. Part 1 (pp.9-11). Kharkiv: Konsym, Osnova.

5. Lukyanchikov, B. E., Lukyanchikov, E. D. & Petryaev, S. Yu. (2017). *Criminalistics: A textbook in 2 parts. Part 1: introduction to the course of criminalistics. Criminalistics technology*. (Pp.118,121). Kyiv: National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”.

6. Shepitko, V.Yu., Zhuravel, V.A. & Avdeeva, H.K. (2011). Innovations in criminalistics and their implementation in the activities of pretrial investigation bodies. *Issues of crime prevention,* Kharkiv: Pravo, 21, 39-46.

7. Bernaz, V.D. (2008). Integration of the achievements of modern science in investigative activities. *South Ukrainian Law Journal*, 4, 188-191.

8. Zhizhina, M.V. (2012). Innovative development of criminalistics at the present stage. *Lex Russica (Scientific works: Kutafin Moscow State Law University)*, 1, 117-125.

9. Mikhailov, M. A. (2009). Biometrics: a new word in identity identification. *Voronezh forensic readings: collection of scientific papers*, 11, 267-279.

10. Kogutich, I. I. Trends in the adaptation of forensic knowledge in the implementation of legal proceedings. *Visnyk of the Lviv University. Series Law*, 57, 336-341.

11. Pavlyuk, N. V. (2019). Fixing evidentiary information using 3D-visualization systems: materials of the scientific conference based on the results of specialists ' work Academician Stashis Scientific Research Institute for the Study of Crime Problems National Academy of Law Sciences of Ukraine on fundamental topics in 2018. (Pp.158-160) Kharkiv: Pravo, Ukraine.

12. Samoroka, V. A., Prokhorov K. O. (2019). Prospects for using "BIG DATA" in the detection and investigation of crimes. *Academic thought*, 1(6), 74-78.

13. Shepitko,V.Yu. (2012) Criminalistics of the XXI century: the subject of knowledge, tasks and trends in the new conditions. *Modern state and development of criminalistics: collection of scientific papers*. (pp.43-45) Kharkiv: Apostil.

14. Shevchuk V. M. Innovations in criminalistic and practice of their implementation in law enforcement activity // Modern science: problems and innovations. Abstracts of the 2nd International scientific and practical conference. SSPG Publish (May 3-5, 2020). Stockholm, Sweden. 2020. Pp. 903-913.

15. Shevchuk, V.M. (2019). Innovative directions of development of criminalistics. *Innovative methods and digital technologies in criminalistics, forensic science and legal practice:* materials of the international round table (pp. 142-147), Kharkiv, Ukraine.

SCI-CONF.COM.UA

EURASIAN SCIENTIFIC CONGRESS

ABSTRACTS OF V INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE MAY 17-19, 2020

BARCELONA 2020

EURASIAN SCIENTIFIC CONGRESS

Abstracts of V International Scientific and Practical Conference

Barcelona, Spain

17-19 May 2020

Barcelona, Spain

2020

UDC 001.1
BBK 35

The 5th International scientific and practical conference "Eurasian scientific congress" (May 17-19, 2020) Barca Academy Publishing, Barcelona, Spain. 2020. 788 p.

ISBN 978-84-15927-31-0

The recommended citation for this publication is:
Ivanov I. Analysis of the phaunistic composition of Ukraine // Eurasian scientific congress. Abstracts of the 5th International scientific and practical conference. Barca Academy Publishing. Barcelona, Spain. 2020. Pp. 21-27. URL: http://sci-conf.com.ua.

Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighbouring coutries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

e-mail: barca@sci-conf.com.ua

homepage: *http://sci-conf.com.ua*

LEGAL SCIENCES