

Relevant Areas of Expert Research in Ukraine Under Martial Law

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In today's world forensic expert activity is an essential component of ensuring justice in Ukraine through independent, qualified, and objective forensic examination, oriented towards maximizing the use of scientific and technological advancements. Due to the introduction of state-of-the-art technologies, research methods, and standards of conduct, forensic examination effectiveness in Ukraine has significantly increased in recent years, ensuring more precise and objective results and steady progress in this field throughout its development. At the same time, in the face of the new challenges posed by the full-scale military invasion and occupation of parts of our country's territory, expert research has gained special relevance and importance, as well as complexity.

Bombardment and artillery shelling of peaceful towns and villages by the ruscists, resulting in death and devastation, has led to an increase in the number of appeals to forensic science institutions of our state to document the consequences of the Russian Federation's invasion into Ukraine. Experts investigate destroyed infrastructure, residential buildings, and equipment in cities that will forever be in our history as witnesses to the horrific crimes of the Putin regime, genocide against the entire Ukrainian people. Participation of forensic experts in criminal proceedings for military crimes committed by the occupying forces is also crucial. Disastrous consequences of war are also

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documented in the work of experts in economics, commodity science, ecology, electrical engineering, psychology, and other specialists.

An example of expert research conducted by forensic experts from National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» (hereinafter referred to as NSC FSI), which is part of evidentiary basis for documenting the enemy's criminal actions, is examination aimed at determining the type of weapon used by war criminals who shot the writer Volodymyr Vakulenko and many other Ukrainians during the occupation of the city of Izyum and surrounding villages. Experts have determined that the weapons were manufactured by the aggressor country for the so-called LPR and DPR with deterioration in components quality.

NSC FSI experts also joined the selection of reference samples for further DNA analysis to identify persons found in mass gravesites and accelerate the search for missing persons.

Despite all the enemy's efforts to destabilize the situation in Ukraine, amid the horrors of war and the stress under which NSC FSI forensic experts are forced to live and work, the occupiers' military aggression only boosts our motivation to conduct research in a qualitative, timely, and conscientious manner.

Ukraine possesses significant potential for advancing forensic science. With favorable conditions and resources, it can achieve high-quality forensic examination and develop its own modern research methods and technologies, which it is keen to share with international colleagues. Ensuring the objectivity, reliability, and scientific integrity of forensic examinations is fundamental to justice and serves as a cornerstone for protecting citizens' rights in the modern world.

The *Theory and Practice of Forensic Science and Criminalistics* Research Paper Collection, published jointly by NSC «Hon. Prof. M. S. Bokarius FSI» and Yaroslav Mudryi National Law University since 2001, is a specialized scientific edition serving as a platform for sharing practical experience and scientific advancements among lawyers, criminalists, and forensic experts from Ukraine, Europe, and around the world. It is published quarterly in parallel editions in Ukrainian and English. It is indexed by international abstract and citation databases such as Academic Research Index (ResearchBib), Bielefeld Academic Search Engine (BASE), Central and Eastern European online library (CEEOL), Directory of Open Access Journals (DOAJ), Directory of Research Journals Indexing (DRJI), ERIH PLUS, EuroPub, Index Copernicus International, MIAR, RefSeek, Ulrich's, WorldCat, etc. In 2023, it was assigned the media identifier R-3002416.

The content in this issue is traditionally grouped into two main categories: *Research Papers* and *Case Notes*.

Issue 34 of the Collection begins with the review article *Application of Artificial Intelligence and Information and Communication Technologies: Socio-Ethical Problems* by Prof. **Nataliia Filipenko**, Doctor of Law, **Serhii Lukashevych**, and **Olena Andrieieva**, PhDs in Law, Docents (all three from Ukraine), and Prof. **Aleksandar Ivanović**, PhD in Law (Montenegro), emphasizing that existing ethical regulation of use of information and communication technologies and artificial intelligence is mostly limited to framework, declarative documents indicating only general approaches and the purpose of the interaction of humanity with artificial intelligence systems, a kind of warning about possible negative consequences of the use of technologies. Because of potential danger to civilization

of information and communication technologies and artificial intelligence, it is necessary to strictly license activities related to the production and operation of such systems. For this, at the legislative level, it is necessary to clearly define those responsible for occurrence of out-of-state situations, as well as to answer the question: “*Is the transition of artificial intelligence from the status of an object to the status of a subject of legal relations possible and legal?*”. All of the above indicates importance and significance of the chosen research goal and requires a socio-ethical understanding of the most pressing problems of applying the capabilities of artificial intelligence.

The following research paper by **Serhii Tiulieniev**, PhD in Economics (Ukraine), explores prospects for the development of forensic methods for investigation of criminal offenses related to raiding. According to performed research results, it was determined that in modern sense, a separate forensic investigation method (in a broad sense) should be understood as an integrated product of scientific knowledge in the field of law, formed on the basis of a generalization of investigative and judicial practice, which in its essence is a set of forensic recommendations, proven tactics methods of conducting investigative (search) and covert investigative (search) actions, methods and techniques of optimal and effective use of forensic techniques during pre-trial investigation developed in accordance with procedural requirements in order to optimize the model of conducting pre-trial investigation of a separate criminal offense, their groups, etc. Based on the generalization of certain elements of the criminal law and forensic characteristics of criminal offenses related to raiding, varieties of individual forensic methods of investigation have been determined, including interspecies, special, subspecies, species, etc.

Equally interesting is the research paper *Psychophysiological Research and its Place in the Lithuanian Scientific Discourse* by Lithuanian colleagues: Prof. **Hendryk Malewski**, Doctor of Law, and **Laimutis Kraujalis**. This article gives a brief overview of the development of psycho-physiological research using the polygraph. The main focus is on the legal regulation of these methods and the evaluation of the scientific discourse of Lithuanian specialists on the problems of psychophysiological research and the application of its methods in comparison with analogous processes in Poland. After the restoration of independence in 1990, the Lithuanian media interest in this issue prompted the law enforcement authorities and their specialists and scientists to look deeper into the possibility, reliability, permissibility and effectiveness of the use of these technical diagnostic tools in foreign countries, as well as into their compatibility with the Lithuanian law in the investigation of crimes. Some aspects of psychophysiological tests using the polygraph in Poland have been analysed for comparison purposes, which in the neighbouring country have attracted considerably more attention, both in the academic world as well as among lawyers and representatives of law enforcement agencies, etc.

The article *Separate Aspects of Evidentiary Basis Formation during the Investigation of Facts Related to Collaborationism* by **Serghii Perepelytsia**, PhD in Law, Docent (Ukraine), highlights that the formation of the evidentiary basis during pre-trial investigation of collaboration crimes depends on the availability of witness and eyewitness testimony, the identification of which is a leading task of the investigation involving the use of various measures (i.e., government and local self-government bodies obtain information about these people and suspects or temporarily access property

and documents as envisaged by law). The task of investigators in investigating this type of crime is: 1) to identify private individuals, representatives of volunteer movements, or community organizations who have documented crimes associated with collaboration activities; 2) to acquire information they have documented. Answers to questions arising during pre-trial investigation are contained in the expert conclusion (as a significant component of the evidentiary basis) because it is within the expert conclusion that a forensic expert provides information that he/she identified during the investigation and utilizes specific expertise that the investigator may not have possessed.

Another notable research paper in this Section is *Analysis of Cannabis and its Products in the Context Forensic Science* by **Iryna Kuchynska**, PhD in Pharmacy (Ukraine). Legalization of low-tetrahydrocannabinol-high-cannabidiol cannabis plants is gaining momentum due to growing demand for these products. In some countries, the testing of cannabis and products containing it is a legal requirement: cannabis is identified, the amount of tetrahydrocannabinol or cannabidiol and their precursor acids is assessed. Current research requires more sensitive and reliable analytical methods for accurate identification and quantification of cannabis components. Since the forensic expert must be well-versed in modern trends in the analysis of prohibited substances and use the latest data from the analytical and forensic literature in his work, such information will help them choose research methods, taking into account the actual resources and equipment of forensic laboratories.

One more significant research in this Collection is the research paper *Research, Verification and Evaluation of Forensic Expert Conclusion: Forensic Veterinary Aspect* by Prof. **Ivan Yatsenko**, Doctor of Veter-

inary Medicine (Ukraine). The author claims that during verification of forensic expert conclusion, it is necessary to assess its comprehensiveness, completeness and objectivity, as well as scientific validity, reliability, correctness, admissibility of using methods and techniques, means and methods of conducting expert research, as well as adequacy and relationship with other evidence collected within the framework of a criminal proceeding (case) with the aim of making a correct procedural decision (for evidence of factual data and circumstances proven by expert research). The criteria for completeness and reasonableness of the expert's conclusion are proposed, as well as the algorithm for evaluating such a conclusion by the investigator, prosecutor, defense attorney, investigative judge, and court. The application of a set of these criteria to the assessment of a forensic expert's opinion will guarantee the high reliability of the verification and assessment of such conclusion, as well as create reliable conditions for making procedural decisions in legal proceedings.

The Case Notes Section begins with the article *Criminalistics and Crime Scene Investigation in Microgravity Space* by **Görkem Ardacan Tan**, research student (Turkey). It provides insights into the challenges and considerations of criminalistics and crime scene investigation in extraterrestrial gravitational environments. Future space exploration may require the development of protocols for extraterrestrial crime scene investigations. Challenges in microgravity effects, confined space environments, forensic techniques, communication, coordination, and legal jurisdiction are highlighted in this brief. Future discussions and research will provide a basis for establishing protocols for extraterrestrial crime scene investigations to ensure effective and fair forensic practices. As space exploration advances, the development of space

law, technology, and international agreements is crucial to meeting the unique challenges of extraterrestrial crime scene investigations. This summary provides a basis for future discussions and research regarding the establishment of protocols to ensure effective and fair forensic practices off Earth.

The next article *Initial Stage of Deliberate Murder Investigation Motivated by Racial, National or Religious Intolerance* by **Eluchka Kazarian**, post-graduate student (Ukraine), brings to the forefront the importance of identifying typical investigative situations at the initial investigation stage, where specific investigative (detective) actions are taken to collect information, identify signs of a crime and develop investigative leads. At this investigation stage, forensic experts solve specific tasks, assess investigative situation, identify sources of information, determine investigation direction, plan interaction with operational agencies, and collect information about crime circumstances, the victim, and the suspect. The author notes the difficulty of determining the motive of intolerance at the initial stage and the possibility of changing criminal law qualification in the course of pre-trial investigation. Classification of investigative situations based on the sources of initiation of pre-trial investigation and information components serves as the basis for efficient investigation planning.

Another article in the Case Notes Section, authored by **Anatolii Starushkevych**, PhD in Law, Docent (Ukraine), on the topic *Criminal Investigation Methods according to Hans Gross: Past and Present*, explores the contribution made by H. Gross to establishing criminalistics as a science. Emphasis is placed on two methods he proposed for investigating crimes: setting a moment of firm conviction about case circumstances (the investigator's impartial attitude to the information received at the beginning

of an investigation) and graphic tables (visualization of relevant forensic information). It has been argued that the methods proposed by H. Gross are still relevant today due to the prospects of developing a modern applied scientific area (forensic technologies ensuring visualization in a criminal proceeding) and certain issues of unbiased analysis of relevant forensic information by investigators at the initial stage of investigating crimes.

The following research paper *Survey as a Method of Scientific Cognition and Its Influence on the Formation of Forensic Road-Technical Examination Methodology* by **Yevhen Pivnov**, postgraduate student (Ukraine), is dedicated to the topic of surveying as a method of scientific cognition, as well as its influence on developing the methodology of forensic road-technical examinations. It delves into the main terms (concepts) related to methodology of forensic examination and the survey's results of forensic experts. Based on the survey results of forensic experts, the main provisions of organizing forensic examinations in general and forensic road-technical examination in particular have been determined, which will be useful for developing general methodological principles of road-technical examinations. Due to the complexity and regulatory gaps in the provisions on complex expert examinations, changes to the regulatory legal acts have been proposed to establish the mechanism for formalizing the complex of examinations and comprehensive examination as different forms of integrating specific expertise. The author's definition of the concept of forensic science in criminal proceedings is provided, and proposals from forensic experts on improving the effectiveness of forensic activities are summarized.

The Case Notes Section concludes with the manuscript *Conducting Forensic Multidisciplinary Examinations and Sets*

of *Forensic Examinations using Specific Expertise in Economics* authored by **Viktoriya Slyusarenko**, PhD in Economics, Docent, **Oleksiy Khomutenko**, PhD in Economics, Senior Researcher, and **Svitlana Tarasyutina** (all three from Ukraine). The quality of forensic examination depends on a forensic expert's qualification and his/her in-depth and responsible research on objects, the investigation of which arose during pre-trial investigation or trial. Currently, expert methodologies for conducting forensic multidisciplinary economic examinations and sets of forensic examinations require improvement, especially in light of wartime conditions. Multidisciplinary examination reflects contemporary theoretical trends by integrating legal norms into practical application to address urgent tasks in pre-trial investigations and court proceedings. At the same time, multidisciplinary examination demonstrates high efficiency and broad possibilities through the combined and synthesized application of knowledge from diverse scientific fields and technical tools in addressing tasks assigned to a forensic expert. Multidisciplinary examination conclusions have a varied impact on the decisions made by the parties to the dispute. Therefore, improving the methodology of conducting forensic multidisciplinary examinations or sets of forensic examinations during the resolution of complex issues, which often arise in conditions of martial law, is relevant. This allows for the determination of unified approaches to addressing problematic aspects of such research.

The Scientific News Section highlights the participation of NSC FSI staff in scientific events of the 1st quarter of 2024: the All-Ukrainian Scientific and Practical Conference “30 Years of the Law of Ukraine “On Forensic Examination”: Current Status and

Prospects for Improvement” organized by our colleagues: Odesa Scientific Research Institute of Forensic Expertise; the thematic scientific and methodological seminar with practical cases on the topic “Disputes Regarding the Determination of Children’s Place of Residence and Parental Involvement in Their Upbringing During the State of War (Involvement of Specific Expertise and Judicial Practice)” hosted at the Kyiv Branch of National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute» and the roundtable discussion “Improving the Mechanism of Conducting Forensic Psychological Examinations of Minors, Victims of Domestic Violence, Taking into Account the Victim-Oriented Approach” held by the State Scientific Research Forensic Center of the Ministry of Internal Affairs of Ukraine; the All-Ukrainian Educational Project “Unbreakable Legal Schools of Ukraine” initiated by 13 legal schools and leading educational institutions of the country (including Yaroslav Mudryi National Law University and the Center for Criminalistic Innovations *IntelligenTtrident*); the Scientific and Practical Conference “Transformation of Criminalistics Tasks in Conditions of Martial Law and European Integration Processes” (dedicated to the memory of Violetta Omelianivna Konovalova, an Emeritus Professor of Yaroslav Mudryi National Law University, Academician of the National Academy of Legal Sciences of Ukraine, Doctor of Law, Professor, Honored Worker of Science and Technology of Ukraine) organized by the Department of Criminalistics at Yaroslav Mudryi National Law University.

The increased focus on educational efforts in defending 5 doctoral dissertations in the field of “Law” (specialty 081) since the beginning of the year, along with the granting of a license to NSC FSI for such defense with a licensed capacity of 40 indi-

viduals (including foreigners and stateless persons), have been separately noted.

The Editorial Board of the *Theory and Practice of Forensic Science and Criminalistics* Research Paper Collection is sincerely grateful to all the authors who provided materials for publication, as well as forensic experts who participated in its publication,

and invites scientists and practitioners to prepare articles for upcoming issues.

Together, only together, can we defeat the aggressor, rebuild our state, contribute to its prosperity in all spheres, and elevate the expert support of justice in Ukraine to a new level!

Together we will win! Glory to Ukraine!

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